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College of Pharmacy

THE
AMERICAN
JOURNAL OF PHARMACY,

PUBLISHED BY AUTHORITY OF THE

PHILADELPHIA COLLEGE OF PHARMACY.

EDITED BY

WILLIAM PROCTER, Jr.

PUBLISHING COMMITTEE FOR 1867:

CHARLES ELLIS, ALFRED B. TAYLOR,
PROF. JOHN M. MAISCH, PROF. EDWARD PARRISH,
AND THE EDITOR.

VOLUME XXXIX.

THIRD SERIES, VOL. XV.

PHILADELPHIA :
MERRIHEW & SON, PRINTERS,
No. 243 Arch Street, below Third St.
1867.

Transferred to Harvard Med. School

**HARVARD UNIVERSITY
SCHOOL OF MEDICINE AND PUBLIC HEALTH
LIBRARY**

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1867 Mar 25

VOL. XXXIX.]

AMERICAN

[NO. I.

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JANUARY, 1867.

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NOTICE BY THE PUBLISHING COMMITTEE.

The American Journal of Pharmacy has now completed its 38th volume. On an examination of the stock of the Journal, the Committee find that eight of the volumes are wholly or partially out of print—viz., vols 1, 2, 3 and 5 of the first series, and vol. 1 of the 2d series, and the 4th, 5th and 13th vols. of the 3d series. All the remaining volumes, 29 in number, they can supply on demand. Believing that the work embodies a large amount of information, extremely valuable to Apothecaries, Druggists and Physicians—comprehending, in fact, a faithful record of the development of Pharmaceutical science and inventions during the period of its issue, now about thirty-eight years, both in Europe and America, the Committee consider that no Pharmaceutical library should be without it.

Besides the abstract and applied science embodied in this work, a large number of formulæ are contained in it, including many, which though not official, are more or less valuable and in use.

As an inducement to Subscribers to complete their sets as far as possible, the Committee offer the back volumes to the 24th inclusive, at the reduced price of \$1.50 each, nett.

The volumes 25 to 38 inclusive, except the 28th and 29th volumes, are held at the publishing price, 3.00, unless a full set is taken, in which case they will be supplied at \$2.50 per volume.

The Committee offer the publication price in money for the 4th number of the 1st volume, published January, 1830; for the complete 2d volume, commencing April, 1830; for the complete 3d volume (1831); for the complete 5th volume, 1833, and for the complete 7th volume, commencing April, 1835. They will also be glad to receive and pay for the January and July numbers of 1857, for the July number, 1856, for the 37th volume, (1865,) and for the January number, 1866.

CHARLES ELLIS,	ALFRED B. TAYLOR,	} Committee.
Prof. JOHN M. MAISCH,	Prof. EDWARD PARRISH,	

THE
AMERICAN JOURNAL OF PHARMACY.

JANUARY, 1867.

ON LIQUOR MAGNESIÆ CITRATIS.

BY JOHN M. MAISCH.

During the discussion on the Internal Revenue Law which took place at the last meeting of the American Pharmaceutical Association, at Detroit, Mich., Prof. Edward Parrish remarked that the solution of citrate of magnesia prepared by the formula of the Pharmacopœia would not keep, but soon produced a crystalline precipitate of neutral citrate of magnesia. Since my name was then mentioned in this connection, it may not be considered out of place to offer some remarks on this subject.

When returning to the practice of pharmacy last spring, my attempts to prepare this solution by the officinal formula utterly failed to produce a stable solution; and it was only by reducing the amount of magnesia from 120 gradually to 100 grains, that I succeeded. These experiments were made with commercial light magnesia, of good quality, containing only a very small amount of carbonic acid, but free from iron and lime. When 105 grains of this magnesia was employed to 450 grains of crystallized citric acid and 40 grains of bicarbonate of potassa, the solution would keep for a few days, but then crystals of the neutral citrate would be gradually deposited. These results are in direct opposition to the statement of the U. S. Dispensatory, which asserts (12th edition, page 1207) that "solution of citrate of magnesia made by this formula (with 120 grains calcined magnesia) is not liable to the objection of letting fall a granular precipitate." On inquiry among some of my friends

of the pharmaceutical profession, I learned that they met with the same difficulty, and overcame it only by adopting a formula differing from that of the Pharmacopœia in the proportion of the materials employed, some departing in this instance from *all* the quantities directed by our national standard. I have heard that some apothecaries employ only 240 to 300 grains of citric acid to the bottle, and reduce the amount of magnesia or carbonate of magnesia accordingly. Prof. Parrish, in the third edition of his Treatise on Pharmacy, gives 360 grains citric acid to 105 grains of magnesia, which, calculated for the officinal quantity of 450 grains of citric acid, would require 131 grains, or 11 grains more of magnesia than the Pharmacopœia orders. This proportion may suit very well to a calcined magnesia which by exposure to the air has become considerably hydrated and carbonated, but it exceeds the amount of a fair quality of calcined magnesia by about 30 per cent., and of pure magnesia, free from carbonic acid and water of hydration, by nearly 50 per cent., as I shall presently show.

What the Pharmacopœia means by the term "magnesia" is pretty clear, from the officinal process for preparing it. It directs to expose carbonate of magnesia to a red heat for two hours, or until the carbonic acid is entirely expelled. Carbonate of magnesia is a hydrated basic carbonate; on exposing it to heat, the water of hydration is given off first, and afterwards the carbonic acid, so that if all the carbonic acid has been expelled, the earth consists only of MgO .

Among the tests for magnesia, the Pharmacopœia requires non-effervescence with acids; consequently the preparations wherein magnesia is used are, or ought to be, based upon perfectly calcined magnesia, of the formula MgO .

For the solution under consideration, our national authority orders 450 grains crystallized citric acid to 120 grains magnesia. Citric acid has the formula $3HO, C_{12}H_5O_{11} + aq.$ weight of equivalent 201, or it contains 2 aq., and has then an equivalent weight of 210. 40 grains bicarbonate of potassa (equivalent weight 100·2, or 3 equivalents = 300·6) require for complete neutralization 26·75 grains monohydrated citric acid; for

$$300\cdot6 : 201 :: 40 : 26\cdot75.$$

This amount deducted from the citric acid employed leaves $450 - 26.75 = 423.25$ grains to combine with magnesia. The equivalent weight of magnesia is 20, or 3 equivalents = 60. The remaining citric acid requires, therefore, for complete neutralization, $201 : 60 :: 423.25 : 126.34$ grains of pure magnesia, or only $6\frac{1}{2}$ grains more than ordered by the Pharmacopœia.

Commercial citric acid, however, mostly contains, and probably often consists altogether of the bihydrate; the amount required for neutralizing the bicarbonate of potassa will then be $300.6 : 210 :: 40 : 27.94$ grains, leaving $450 - 27.94 = 422.06$ grains citric acid to combine with magnesia, of which will be required for complete neutralization 120.65 grains; for

$$210 : 60 :: 422.06 : 120.65.$$

This amount is that of the Pharmacopœia, within $\frac{1}{2}$ gr. It is obvious, therefore, that if pure magnesia is used, its quantity is sufficient to form with almost the entire amount of citric acid, the neutral citrate of magnesia $3\text{MgO}, \text{C}_{12}\text{H}_5\text{O}_{11} + 14 \text{ aq.}$, which has been shown by Richter, Delabarre and Prof. Procter to be separated from its aqueous solution on standing, and then to be as good as insoluble in water.

Exposed to the atmosphere, calcined magnesia gradually absorbs and combines with water, and afterwards the hydrate formed unites with carbonic acid. A magnesia which effervesces with acids must have previously become hydrated to a certain extent. The English heavy calcined magnesia appears to withstand hydration and carbonation much better than the light article; I have observed that it may become quite solid by the absorption of water and still be free, or contain mere traces of carbonic acid. If a good quality of this magnesia is used in the proportion of 100 grains to 450 grains of citric acid, a clear solution is not obtained, and, on standing, a considerable precipitation takes place. Repeated experiments made with this magnesia have shown that between 85 and 90 grains of it are sufficient for the citric acid. 85 grains is about two-thirds of $126\frac{1}{2}$ grains, the quantity calculated above as furnishing neutral citrate of magnesia.

These facts appear to me to demonstrate very clearly that the solution, instead of containing the neutral citrate, really contains

the two-thirds citrate of magnesia, or, in other words, that the compound 2MgO , HO , $\text{C}_{12}\text{H}_5\text{O}_{11}$, and not the one with 3MgO , is the citrate retaining its solubility in water.

It would be interesting, from a chemical as well as pharmaceutical view, to institute investigations to this effect with pure anhydrous magnesia or its carbonate of known composition, and with well determined citric acid. The two-thirds citrate, I believe, has been prepared but once (by Heldt), and nothing is known concerning it, except that it is a gummy mass. Might it not perhaps be obtainable in a dry state, and retain its perfect solubility?

But herewith the practical difficulties would not be overcome, to prepare the solution of uniform quality. The method suggested by Fred. Stearns, in the Proceedings of the American Pharmaceutical Association, 1857, page 152, is objectionable chiefly on account of the impossibility of preparing the solution on the small scale or at short notice, and a loss of magnesia is very likely to occur during the filtration of the dissolved bicarbonate. Although this solution contains a large excess of free carbonic acid, this is expelled by filtration, and the filtrate containing no uncombined carbonic acid, or merely traces of it, is apt to deposit neutral carbonate unless used without delay.

The analyses, by Phillips, Townes, Otto and Lake, of commercial samples of subcarbonate of magnesia, agree very nearly in the percentage of magnesia, which they found to vary between 40.8 and 42; and with this inconsiderable variation, it might perhaps be advisable to return to the use of the carbonate in the preparation of the liquor magnesiæ citratis. 85 grains MgO are contained in about 210 grains of carbonate; and this amount yields, with 450 grains of citric acid and 40 grains bicarbonate of potassa, an agreeable solution. I have not tried whether more carbonate can be dissolved to a permanent solution.

While on this subject, it may as well be remarked that the amount of syrup of citric acid (two fluidounces to the bottle) ordered by the Pharmacopœia is entirely too much for the large doses requisite of this medicine; one-half the quantity is amply sufficient, producing a solution which is pleasantly sweetened.

In regard to the manipulation, I have often observed young pharmacutists to add all the magnesia at once to the solution of, or to the partly undissolved acid. The necessary consequence is, that a portion of neutral citrate is formed in the hot liquid, which cannot be dissolved by subsequent trituration, and must be filtered off, thus occasioning a loss of both citric acid and magnesia. The proper way to proceed is to add the magnesia in small portions to the solution of the acid, or, better still, to suspend the magnesia in water and add it gradually, waiting each time until the solution is almost complete.

The proportions which I have used with uniformly good success are as follows: 450 grains citric acid, 100 grains light calcined magnesia, containing a minute quantity of carbonate (or 90 grains heavy magnesia, free from carbonate), 40 grains bicarbonate of potassa, 1 fluidounce syrup of citric acid, and sufficient water.

PHARMACEUTICAL ITEMS.

BY WILLIAM C. BAKES.

Under this title we propose to publish during the year a series of articles on practical subjects, in which we shall include, as far as possible, formulas for the various new preparations issued, and other matters coming under our observation of interest to Pharmacutists generally.

"Camphor Ice."

This is the popular name given to a preparation much used during the winter season as an application to chapped and abraded skin. Many pharmacutists make a *specialty* of it, and find a large sale for the various combinations sold under this name. The following formula yields an elegant preparation, besides the merit of being economical and readily made:

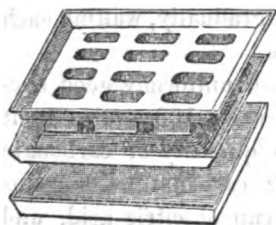
Take of Powdered camphor,	2 ounces.
White wax,	4 "
English oil lavender,	2 drachms.
Benzoated suet,	1 pound.

Melt the suet and wax together, and when nearly cool add the

camphor and oil of lavender, and pour into moulds of convenient shape and size. Glycerine and other substances are sometimes added with a view of increasing its efficiency and adding to its popularity.

Camphor Ice Tray.

In this connection it might be well to speak of an arrangement for moulding camphor ice and other fusible solid substances. This consists of a tin tray, as seen in the drawing, containing a number of stationary moulds, which is arranged to set in a shallow tray. The melted preparation is thrown into the moulds, and a small quantity thrown into the lower tray serves as a luting; when cold the surplus material may be scraped off and the tablets pushed out without difficulty. The moulds should taper about an eighth of an inch to facilitate the removal of the tablets, and the whole apparatus should be made with much nicety in order to work satisfactorily.



Cocoa butter may be readily moulded, and forms one of the nicest applications for chapped hands, lips, &c., possessing a pleasant taste and odor and very emollient in its effects.

"Perfumed" or "Flower scented" Glycerine,

Is among the "*Winter requisites*" sold by many Pharmacutists. This is conveniently and readily prepared by triturating any of the *extracts*, such as heliotrope, millefleur, jasmine, &c., with carbonate of magnesia, in the manner directed for the medicated waters. The perfumed water thus obtained is mixed with an equal bulk of glycerine.

Prescription Checks.

In establishments doing a large prescription business, there is great liability to error in dispensing medicines to the wrong customer. This has been known to occur and though perhaps no serious results have ever taken place, the mere possibility of an error should lead us to guard against every probable tendency in that direction. Mr. Henry Cramer, of this city, has used for many years a prescription check, and found it

to answer a good purpose. The form is similar to the following. The full size would be too large for convenient insertion here :

For		For		Retain this check until the prescription is compounded, or if it is inconvenient to wait, let the check be presented by the person who calls for the medicine.
Pres. of Dr.		Pres. of Dr.		
No.	Price.	No.	Price.	
	\$		\$	Name and address of the Pharmacist.

The left hand portion is retained by the Pharmacist, and the other given to the patient. As an additional caution a couple of lines are drawn with a pen or pencil obliquely across the line separating the part retained from that given to the customer ; when the check is returned the lines on it must correspond with those on that held by the dispenser when the two edges are placed together. Pencils of various colors might be used by different assistants in the same establishment ; this would show any difference at a glance, and might prove an important distinction in large establishments.

Balsam of Peru.

A test for distinguishing the difference between the *true* and *sophisticated Balsam of Peru*. When a drop or two of the true balsam of Peru is placed upon the tongue it produces a liquid diffused impression, whilst the sophisticated being generally a solution of resin, which deposits the resin on the back of the teeth and on the tongue.

We are indebted to Mr. W. J. Jenks for this simple test, which may be relied on as furnishing a convenient method of detecting the true from the false balsam of Peru.

ON LIQUOR FERRI PERACETATIS.

By JOHN M. MAISCH.

In the sixth edition of the Prussian Pharmacopœia this preparation was officinal under the name of liquor ferri acetici, and was prepared by precipitating a solution of sesquichloride of iron with ammonia, and dissolving the washed hydrated oxide of iron in acetic acid.

The seventh edition of this Pharmacopœia has changed the

name to *Ferrum aceticum solutum*, and improved the process by employing protosulphate of iron as the source for the hydrated sesquioxide.

Of late this preparation has been employed to some extent by physicians of this city; it was at least prescribed, though probably rarely furnished. I have seen a specimen pretending to be the solution of the Prussian Pharmacopœia, which was so unlike to it in its physical properties that it could not have been prepared by its formula, or else the whole manipulation was wrong and the preparation spoiled.

It is well known that dilute solutions of neutral persalts of iron are colored deep brownish red by all acetates; this color disappears on the addition of a very slight excess of any of the stronger acids, but it becomes deeper if the liquid is rendered more alkaline. The preparation in question contains eight per cent. of metallic iron in the form of a two-thirds basic salt ($\text{Fe}_2\text{O}_3, 2\text{Ac}$), and it is evident, from this proportion and the reactions just stated, that it must be of a very deep brown red color. This is really the case, the coloration being of such intensity that the solution is transparent only in thin layers.

The following is the formula of the latest edition (1862) of the Prussian Pharmacopœia: 40 parts of pure protosulphate of iron are oxidized in the usual way to tersulphate; the solution is precipitated by ammonia, the resulting hydrated sesquioxide of iron is well washed with water, and the excess of this liquid, which is mechanically retained by the bulky precipitate, is expressed between linen surrounded by bibulous paper. The hydrated oxide of iron weighs about 32 parts. It is now mixed with 64 parts of acetic acid, spec. grav. 1.088,* containing 29 per cent. of glacial acetic acid, and the mixture is agitated until a perfect solution is effected, which is strained through linen, the strainer being washed with sufficient water to make the preparation weigh one hundred parts. It is of a deep red brown color, has a specific gravity of 1.134 to 1.138 and contains eight per cent. of iron.

To succeed in obtaining a perfectly stable preparation, a few

* This is the *Acidum aceticum dilutum*, or *Acetum concentratum*, of the Prussian Pharmacopœia.

cautions must be observed, which, if disregarded, will produce a solution, prone to change, occasioning the precipitation of a large portion of iron, which once separated cannot be redissolved again by the further addition of acetic acid.

In the first place it is indispensable to entirely sesquioxidize the iron; if a portion should remain in the state of protoxide, a proto-peroxide would afterwards be precipitated, which is either not entirely soluble in cold acetic acid, or if dissolved, would render the solution prone to change through its affinity for oxygen.

The tersulphate of iron as well as the ammonia should be considerably diluted with water, and the alkali kept in excess. This is accomplished by using more than an equivalent quantity of ammonia, and by pouring the diluted iron solution into the diluted ammonia. A pure hydrated sesquioxide is then precipitated free from basic salt. The non-volatile alkalies are not so well adapted for this purpose, because the precipitate is apt to carry down a portion of them which cannot be removed by subsequent washing. The precipitation, moreover, must not be accomplished too rapidly, in order to avoid the partial heating of the liquid at the points of contact with the precipitant, whereby the ferric oxide would be precipitated in a different state of hydration, being then insoluble or readily separated from its solution in acetic acid.

The hydrated oxide must be washed with water and expressed until it is entirely free from sulphate of ammonia; solution of acetate of iron is gradually precipitated in the presence of other salts.

The acetic acid must be of the proper strength. If stronger than directed a neutral peracetate ($\text{Fe}_2\text{O}_3, 3 \text{Ac}$) will be formed; if too weak, or if the oxide should be in excess, a more basic salt is obtained, which is at first perfectly soluble, but is rapidly decomposed by precipitating oxide of iron, or probably a very basic acetate, leaving neutral acetate in solution.

Heat must not be applied, either during the precipitation or washing of the sesquioxide, or during its solution in acetic acid. In the former case the state of hydration will be altered as stated before; in the latter case the oxide will at first dissolve but soon precipitate wholly or in part. Solution of peracetate of iron

may be completely decomposed by exposing it to the boiling temperature.

Finally, the finished preparation must be protected against too strong a light as well as against too high or too low a temperature, and against the frequent access of the atmosphere. The solutions of all acetates are prone to change in contact with the air, and this change is hastened by the influence of light. On the other hand peroxide of iron, when in solution together with many organic compounds will readily be reduced to protoxide, more rapidly if light has free access to it or is aided by heat.

If these precautions in regard to manipulation and preservation are observed, the solution may be kept for a very long time without apparent change.

The preparation may be considered pure and correct if aside from the amount of acetic acid and of iron, it answers to the following tests :

Diluted with water it does not produce a precipitate with chloride of barium,—absence of sulphuric acid.

Acidulated with nitric acid, nitrate of silver occasions no precipitate,—absence of chlorides.

Diluted and precipitated by an excess of ammonia, the filtrate is colorless and leaves no solid residue on evaporation,—absence of some metals, acids and the fixed alkalis and alkaline earths.

Acidulated with muriatic acid and deoxidized by sulphurous acid or an alkaline sulphite, the colorless solution is not disturbed on the addition of hydrosulphuric acid—absence of the heavy metals.

The dose of this preparation is from three to ten drops, usually largely diluted with water, sweetened water or wine.

It is employed in the preparation of *tinctura ferri acetatis æthereæ*, which is composed of nine parts (by weight) of the liquor, two parts of alcohol sp. gr. .83, and one part of acetic ether.

This is the *tinctura ferri s. nervina Klaprothii* or *æther aceticus ferratus Klaprothii*, which is an agreeable preparation, much more acceptable to a delicate stomach than the liquor; it contains six per cent. of iron and is given in doses from ten to sixty drops several times daily, usually combined with cinnamon water or some other aromatic.

NOTE ON "ALCOHOLIZED IRON."

BY THE EDITOR.

A preparation of metallic iron, under this name, is imported from Germany, where it is employed for internal use in the manner of iron by hydrogen. Its general aspect is that of powdered plumbago, but with an ordinary pocket lens its particles are observed to possess metallic lustre, and are rounded and flattened, as would result from attrition. We have no very positive information relative to the commercial origin of this powder, or of the manner of its manufacture. Its invoice price is about forty cents per pound. It is said to be produced in western Austria, Styria, or the Tyrol, and it is supposed to be produced by attrition, in some cheap way, as by agitation on the gate of a saw mill, or steam machinery. The term "alcoholized" is common in Germany, and is applied to powders in the sense of a high grade of fineness and purity,—just as the term "æthereal" is applied to oils, signifying that they are highly rectified,—and hence does not indicate that alcohol is used in making them. Duflos (Chemischen Arzneimitteln) describes this preparation under the name "*Ferrum pulveratum*," and gives the synonyms *Pulvis. s. Alkohol Ferri*, *Limatura Martis levigata*, *Limaille de Fer porphyrisée*, *Fer porphyrisée*, &c.

Alcoholized iron is readily attacked by cool diluted sulphuric acid, but not so quickly nor with such rapid effervescence as is good reduced iron. When an excess of acid is used, a small quantity of very fine black powder remains, suggesting the possibility of its being cast iron. The gas evolved was nearly all free from sulphur, but at the last, traces of H.S. are indicated when moistened carbonate of lead paper is suspended in the mouth of the flask.

Limaille de fer porphyrisée of French pharmacy is made by purifying iron filings from particles of other metals by aid of a good magnet, sifting out the first dust, if at all rusty, after first triturating them in an iron mortar; but it is better to begin with recent unoxidized filings. These are beaten in a thin stratum in a mortar in which the bottom is very flat, and the face of the pestle of corresponding curve, using the sieve from

time to time to remove the metallic dust. The operation is tedious and troublesome, and led M. Quevenne to the substitution of "Iron by hydrogen," which is more elegant and soluble, but much more costly. It should have been observed that the instruments used must be perfectly dry and free from dampness, and that the operation should be performed on a dry day.

Alcoholized iron is largely sold in New York (probably among German apothecaries), and is said to be often substituted for iron by hydrogen. The best of it cannot be far from equal to reduced iron, and it has the merit of not containing sulphur, so commonly observed in the commercial reduced iron.

It is to be regretted that some of the manufacturers of fine chemicals do not make reduced iron a speciality. The practical difficulties of the process are easily overcome and avoided by an intelligent operative, and, once acquired, no reason need prevent regular results. Cannot some of our friends take hold of it, and supply the market with pure metallic iron by hydrogenic reduction, free from sulphur, and of a light spongy texture, at a price that will bring it into more general use?

ON A PREVIOUSLY UNPUBLISHED METHOD OF MANUFACTURING PILLS ON A LARGE SCALE.

BY EDWARD PARRISH.

Some years ago I came to the knowledge of a process for making pills in the large way, which I did not feel at liberty to communicate from fear of compromising the interests of an ingenious practical confectioner who was, for a short time, in my employ. Considering this motive no longer binding, I offer to Pharmacists the following process:

Having granulated a suitable quantity of sugar, separate the smaller and larger granules by sieves, so as to bring the whole to a uniform degree of coarseness. Now prepare a clean copper pan of suitable size, suspended by a rope or chain two or three feet above a small furnace containing a charcoal fire; introduce the granules, moisten them with thick mucilage or syrup, and dust over them the ingredients to constitute the pills, which must have been previously reduced to very fine powder and thoroughly

mixed; now, by a rapid and dexterous rotary and shaking motion of the pan and its contents, diffuse the powder equally over the moistened granules till they are completely and uniformly covered, they will soon require additional moistening and another supply of the dry powder, which on further rotation will be pretty evenly distributed. By repeating the process of moistening and dusting with the constant and skilful application of the combined rotary and shaking motion, pills will be formed which will be perfectly round and nearly uniform in size. When nearly of the required size a sieve is used of the previously ascertained proper number of meshes to the inch, by which those yet too small are returned to the pan for further treatment, while those which have attained sufficient size are separated. If any are too large they should be reserved for drying and powdering, and may then be mixed with more of the powders and made over again. The chief art in making pills by this process lies in the regulation of the temperature and in a dexterous manipulation, by which the moistened granules and pills are prevented from adhering together and rendered perfectly round.

The pan should never be allowed to get hot—never more than moderately warm, it should be grasped by the left hand, with which the motion is imparted to it, while the right hand is used to prevent the pills adhering and to aid their rotary motion upon the bottom of the pan and upon each other.

A remarkable feature of this process is its adaptation to large quantities. I have never known it tried with less than several pounds of the ingredients, and though some trials have proved rather abortive it has generally produced very uniform and round pills. Compound cathartic and rhubarb pills in charges of ten pounds succeed particularly well. A lot of pills of reduced iron was quite spoiled; they were flat and ill-shaped, probably too heavy to remain round when softened by the heat. Experience will, of course, indicate variations from the process, but the principle is generally applicable to substances obtainable in dry powders. Of course much care is required in adjusting the size of the pills; the granules add slightly to this, although the absence of the pressure applied in the process of trituration and in rolling and cutting, may render the pills by this process

relatively larger; on the other hand, by the aid of heat, a smaller proportion of liquid excipient is necessary than by the ordinary process.

An obvious advantage of this process, which will suggest itself to large manufacturers of pills, arises from the fact that the apparatus employed is precisely that used in sugar-coating, and in possession of all those who practice that art.

Of course I make no claim to originality in regard to this process. It has evidently been long in use by some manufacturers of French proprietary pills, as may be ascertained by cutting some of these in half, when the granules will appear in the centre.

ALUM CRYSTALLIZATIONS OVER FRESH FLOWERS.

By W. P. CREECY.

Editor American Journal of Pharmacy :

In one of your recent numbers I saw that science had found its way back to childhood, in the shape of "soap bubbles;" and I will, with your favor, turn it in another equally interesting light channel, and tell you what you already know, perhaps:—how to make baskets and flowers ornamental, even in the midst of winter, by crystallizing them with alum.

Make fancifully-shaped baskets of pliable copper wire, and wrap them with gauze. Into these tie to the bottom violets, ferns, geranium leaves, crysanthemums,—in fact, any flowers except full-blown roses,—and sink them in a solution of alum of one pound to the gallon of water, after the solution has cooled; as the colors will then be preserved in their original beauty, and the crystallized alum will hold faster than when from a hot solution. When you have a light covering of distinct crystals that cover completely the articles, remove carefully, and allow them to drip for twelve hours.

These baskets make a truly beautiful parlor ornament suspended in the centre of a room, and for a long time preserve the freshness of the flowers.

Vicksburg, Miss., Dec., 1866.

ON EXTRACTUM COLOCYNTHIDIS ALCOHOLICUM, U. S. P.

BY WILLIAM PROCTER, JR.

In the formula for this preparation 48 troyounces of colocynth is directed to be deprived of its seeds, ground and treated with diluted alcohol, first by maceration and expression and afterwards by percolation, until two gallons of tincture is obtained, which is then distilled to recover ten pints of alcoholic liquid, the residual liquid in the still being evaporated to dryness and powdered. Thus made, the product should weigh seven troyounces.

Having occasion to treat 48 troyounces of colocynth in making the compound extract, it was deprived of seeds and weighed 12 troyounces; this was ground, macerated several days in five pints of diluted alcohol and strongly expressed, to get four pints of liquid; the residue, packed closely in a percolator, was treated slowly with diluted alcohol till five pints had passed, or until the passing liquid was but slightly bitter. The alcohol was recovered, the residue evaporated to dryness and powdered, when it weighed *three and a quarter troy ounces*, about 6·8 per cent.

This result occasioning some surprise, four troyounces of the same lot of colocynth was treated; the proportion of pulp was a little larger, and the whole drug, unbroken seeds and all, was moistened with diluted alcohol, packed and percolated directly with diluted alcohol, until the full pharmacopœia quantity of tincture had passed. This, on evaporation, yielded 200 grains of extract, equivalent to 9·6 per cent. In the latter case the seeds were treated with the pulp, without bruising, and a larger quantity of menstruum used than in the first operation, yet not coming up to the pharmacopœia quantity. Seeing this variation in yield would have a marked influence on the compound extract, it occurred to me to seek the experience of Dr. E. R. Squibb in regard to the yield of simple extract, knowing that the manipulation of the officinal processes was in the main of his suggestion, though modified somewhat in the Committee of Revision. I accordingly wrote to him for a copy of his results, with permission to use them in this paper, which he cheerfully and very freely gave me as follows:

"*My dear Sir*,—In looking over my note book, at your request, back to 1857, I find only two records of ascertained proportion of seed and pulp in colocynth. In one the pulp weighed 26·03 per cent., and in the other 26·23 per cent. I have long since ceased to ascertain the proportion between seed and pulp, and simply grind the whole up in a mill which *will be sure not to break* the seed, and then percolate the whole together. The results of these percolations are as follows :

1860. March	100 lb.	colocynth,	yield	14 lb. 8 oz.	simp.	ext.	or	14·5	p. ct.
Oct.	280 "	"	"	40 " 8 "	"	"	"	14·46	"
1861. Jan.	45 "	"	"	6 " 2½ "	"	"	"	14·	"
July	300 "	"	"	48 " 6 "	"	"	"	16·2	"
Sept.	544 " 8	"	"	85 " 6 "	"	"	"	15·7	"
Dec.	197 " 8	"	"	31 " 0 "	"	"	"	15·7	"
1862. Jan.	315 " 3	"	"	50 " 8 "	"	"	"	16·03	"
April	250 "	"	"	34 " 8 "	"	"	"	13·8	"
May	224 " 6	"	"	30 " 8 "	"	"	"	13·7	"
June	262 "	"	"	38 " "	"	"	"	14·5	"
July	246 "	"	"	36 " "	"	"	"	14·6	"
Aug.	264 " 8	"	"	35 " 10 "	"	"	"	13·5	"
1863. Feb.	236 " 9	"	"	33 " 12 "	"	"	"	14·3	"
April	506 "	"	"	66 " 14 "	"	"	"	13·1	"
July	605 " 13	"	"	90 " 12 "	"	"	"	15·*	"
Nov.	643 "	"	"	93 " 4 "	"	"	"	14·46	"
1865. March	925 "	"	"	125 " 8 "	"	"	"	13·5	"
July	1080 "	"	"	122 " "	"	"	"	11·3	"
Sept.	2686 "	"	"	334 " "	"	"	"	12·4	"
Dec.	240 "	"	"	32 " 2 "	"	"	"	13·4	"
<hr/>				<hr/>				<hr/>	
995 lb. 7				1349 lb. 4½				13·56* p. ct.	

" With the exception of the last four parcels all this colocynth was selected and purchased by me. The last four parcels, 4931 lbs., were purchased by the U. S. Government, and the simple extract was made from them for the Government. All my purchases were of good fair quality and only varied as the market for good quality varied. That bought by the Government was not so good, and a portion of some parcels being damaged was separated and thrown away. This does not enter into the weights as given. If the whole weight had been taken the yield would have been lower yet. I cannot reconcile your results with the above table. You will have to try

* Nearly.

again. All my extract was made by percolation alone—no expression used.

“There is one other point in regard to colocynth to which I intended to have directed your attention, but forgot it.

“The size of the apples has comparatively little to do with either the quality or quantity of extract yielded to the menstruum. And their being whole or broken up only affects the proportion of extract from the circumstance that, in hauling cases or casks, the heavier seed shake down to the bottom of the package, or that opposite to the marked side, so that a given weight taken from the top or marked side of a package will always yield more extract than a like weight taken from the middle of the same package, and much more than if taken from the bottom, and beside this, as the cases are usually made of very thin boards, and get split and broken in hauling, the seeds shake out through the crevices, and often make deficient weight but yield more extract. The more recently-adopted plan of importing it compressed, in bales to save freight and packing cases, obviates these causes of variation, but the drug then is usually found damp, and will begin to lose weight as soon as exposed to the air. From this cause alone bale or compressed colocynth yields less extract, and it is not yet a popular form of importing it in the market.

“But the most important point of all in judging the quality of colocynth is the indication given by the seed of the maturity or immaturity of the apples, the mature fruit of course yielding the largest proportion and best quality of extract, even though the proportion of pulp to seed be greater, as is always the case in immature apples. The plump, full, heavy seed, of a fine olive color, no matter whether small or large, indicate mature fruit; and where these are found in greater proportion the drug is always best, no matter whether broken or whole. The flat, shrivelled or shrunken light seed, of a white or pale yellow color, indicate unhealthy fruit, or fruit gathered before maturity; and such, though succulent and mucilaginous, yield a light colored extract in small proportion to alcoholic menstruum.

“Every parcel of colocynth contains not only these two kinds

of seed, but also all grades of condition and color between them, and judgment is necessary to decide upon the proportion in which the mature seed occur in different parcels or shipments."

The careful manner in which these results were obtained and recorded, the large quantities treated and the remarkable approximation of the yields entitle them to credit as a valuable addition to our knowledge.

The colocynth used in my experiment was unbroken, generally of good shape and no excess of seeds, which were mostly well matured. As the letter of Dr. Squibb does not allude to the quantity of menstruum used, the inference is that he employed the officinal quantity. In my percolations most of the solid extract was obtained in the first third of the percolate, and the only way to reconcile the difference between our results is either by supposing a difference in the proportion of soluble matter in the drug or that the menstruum varied in strength or quantity.

When the present formula for compound extract of colocynth was adopted the Committee of Revision determined to use scammony resin in lieu of the variable scammony, employing 75 per cent. of the weight of the scammony formerly directed. The idea of the present pulverulent form of the extract was suggested by Dr. Squibb, (see Amer. Jour. Pharmacy, vol. v. 3d series, p. 97, 1857.) The proportion of simple extract of colocynth to substitute the original six troyounces of pulp was also adopted from the results of that paper, viz.: three and a half troyounces, or about 60 per cent. Now a question worthy of investigation is to ascertain if the simple extract as obtained from several lots of colocynth is the same in strength—or is variable—and whether the increased proportion of extract is made up of inert matter. On this will depend the propriety of returning to the use of the extract from a given weight of pulp rather than to fix the quantity of simple extract. Perhaps the case could be met by using alcohol of 85 per cent., so as to take out only the resinoid matter.

Whilst on this subject it may be well to mention that several physicians have found fault with the officinal compound extract of colocynth because of its great activity and griping

effects. This has doubtless arisen from not graduating the doses to suit its increased power, compared with the old extract, and also from deficiency in the carminative power of the corrigent cardamom. Although Dr. S. originated the mixed powder recipe, he subsequently changed his view and urged on the Committee the propriety of first forming an extract, drying and repowdering, for the reason that the soap operates favorably in modifying the aloetic and resinous ingredients. In querying in reference to this point and to the use of commercial scammony resin, in my letter to him, he replies as follows :

"I always make my resin of scammony from the commercial scammony, and of late can always get this good, 75 to 80 per cent. I have never used the McAndrew's resin, and never will until the Pharmacopœia orders it. My objection to it is the same that I should have if it was proposed to use extract of lettuce instead of lactucarium. One may be as good as the other, but we don't know it. And if we are to substitute at all, I favor resin of May apple instead of scammony, that is for the Pharmacopœia.

"I do not powder the ingredients for the compound extract except the cardamom seed, but simply have them all dry and brittle, so that they might be powdered. I then melt them together (without moistening) and when a smooth uniform hot mixture is made, I stir in the cardamom powder after the steam is shut off the kettle. I still think this important for the reasons I gave the Committee, and the chief reason is that the soap and aloes, when heated together, chemically combine, and form a soluble compound, or at least more soluble than the resins would be uncombined. Beside this it makes a much nicer and more artistic preparation, and is better pharmacy as well as better therapeutics, notwithstanding that you all thought otherwise. My practice and information has also confirmed my proposal to increase the proportion of aromatics, which you rejected. Most of those who use the comp. ext. most intelligently combine it with capsicum. And I think I may safely say I have lost the sale of hundreds of pounds of it through its tendency to gripe, which is no fault of mine but of the Committee. Those who know how to combine it use and value it

much. But I believe the same skill in the use of podophyllum would find that better for most of the uses to which it is applied. You are fully at liberty to use any and all the above just as you please, and I have been a little careful about the statements in order that you may safely use them."

From this it will be seen that the writer advocates a more powerful carminative ingredient and the union of the whole mass as an extract before powdering; and when we consider the risk of not getting the powders intimately and uniformly mixed by the present method, and the very good reasons, pharmaceutic and therapeutic, offered by Dr. Squibb in favor of the combination method, I do not hesitate to recommend its adoption, and would suggest to physicians the propriety of using oil of cloves or capsicum as an addition to the extract in pilular form, to correct its griping tendency.

ON EMPLASTRUM PICIS CUM CANTHARIDE.

By GEO. C. CLOSSE.

"The question referred to me for an answer is :

"What change can be made in the composition of Emplastrum Picis cum Cantharide that will render its consistence firmer in warm weather?"

It will be seen by referring to the Pharmacopœia that this plaster is directed to be made by melting together, in a water bath, 43 troyounces of Burgundy pitch, with 4 troyounces of cerate of Cantharides. It appears to me that the want of firmness in the above composition, when exposed to the summer heat, must depend upon the proportion of lard contained in the cerate of Cantharides. To obviate this I propose to substitute the Burgundy pitch plaster for the Burgundy pitch, and to add Cantharides in powder, instead of cerate of Cantharides.

The formula would then be—take of Emplastrum Picis Burgundicæ 50 troy ounces and 320 grains; Cantharides, in very fine powder, 1 troy ounce and 160 grains. Melt the plaster by means of a water bath, then add the Cantharides and stir constantly until the mixture begins to thicken on cooling.

The above quantities may be reduced as follows :

Emplastrum Picis Burgundicæ 5 troy ounces and 32 grains ;

Cantharides, in a very fine powder, 64 grains, or what would be sufficiently accurate, 4 troy ounces of the first and $50\frac{1}{2}$ grains or 50 grains of the other.

I present some samples.

No. 1, is made by the officinal formula, using true Burgundy pitch.

No. 2, is made by the formula proposed as a substitute for the other, but using the American imitation of the pitch.

No. 3, by the proposed formula, using true Burgundy pitch.

No. 1, I find is softer than the others at a temperature of 70° and over, but cracks more readily when reduced to 60° . I perceive no difference between No. 2 and No. 3 in consistence, the American Burgundy Pitch appearing to answer equally as well as the true.

The better consistence of the plaster made by the proposed formula I attribute partly to its containing more wax than the officinal, the wax being but slightly effected by the temperature until it nearly reaches its melting point.

This also prevents its cracking when exposed to the cold, which I think is of some importance, though not embraced in the question.—*Proc. Am. Pharm. Assoc.*, 1866.

NOTE ON THE PREPARATION OF IODIDE OF AMMONIUM.

BY JAMES F. BABCOCK.

Having occasion some time since to prepare this salt in considerable quantities, my experience with the various processes laid down in the books may not be uninteresting.

The first process tried was that of Spencer, (*U. S. Dispensatory*, 12 Edition, p. 1537), which consists of adding hydrosulphuret of ammonia to iodine until the red color due to the solution of iodine in iodide of ammonium has disappeared. Iodine displaces the sulphur, and the liquid filtered to separate the deposited sulphur is evaporated to dryness.

The deportment of the iodide of ammonium thus formed showed that the decomposition of the hydrosulphuret involved the formation of certain combinations with sulphur, traces of which obstinately adhered to the iodide of ammonium produced, and in time, even when excluded from light, its color changed to

yellow and finally to brown, evolving free iodine, which, of course, made it unreliable by varying the proportion of iodine contained in it, and hence unfitting it for accurate preparations, particularly in photography, in which, of late, it has had such an extensive use. Trials in various ways failed to remove completely the last traces of the sulphur compound alluded to above, and the process was finally laid aside for others, in which the preparation of hydriodic acid and its subsequent neutralization with carbonate of ammonia were necessary.

Different methods for preparing the acid were accordingly made use of, the first being that of the U. S. Pharmacopœia of 1860. It will be remembered that this is based upon the action of hydrosulphuric acid upon iodine. A quantity of hydriodic acid was accordingly prepared, and after separation of sulphur, carefully neutralized with carbonate of ammonia and the whole evaporated.

It was found, however, that the iodide of ammonium produced by this method decomposed in precisely the same manner as that prepared by hydrosulphuret of ammonia, and that traces of sulphur (which probably exists in combination with iodine) continued to be present, and ultimately determined the separation of iodine from its combination.

It will be noticed that this involves the interesting subject of the purity of the hydriodic acid, as prepared by the process of the pharmacopœia, and also the question, whether the tendency of hydriodic acid so produced to change color, is not partially due to traces of sulphur introduced during its preparation.

Granulated lead and iodine, according to Gmelin, (vol. ii. p. 267), shaken together with water until the solution was colorless, and the lead then precipitated by hydrosulphuric acid, was unsatisfactory, it being found that wherever sulphuretted hydrogen or alkaline sulphides were used in the preparation of iodide of ammonium, the salt produced was always liable to decomposition, even in the dark.

One part of phosphorus was melted in forty parts of water, and to the mixture twenty-four parts of iodine gradually added, with constant stirring, gave a solution of hydriodic and phosphoric acids. This was neutralized by carbonate of baryta,

forming insoluble phosphate of baryta, and soluble iodide of barium. This, by double decomposition with sulphate or carbonate of ammonia, gave iodide of ammonium free from objections due to the presence of sulphur.

Iodide of zinc and iodide of iron, by decomposition with carbonate of ammonia, gave equally satisfactory results.

These processes, however, were liable to the objection that, in the precipitation of carbonate of iron or zinc, or in the separation of phosphate of baryta, and afterwards of the carbonate or sulphate of baryta, the necessary amount of washing of these bulky precipitates, to avoid loss, involved so much time and consequent exposure, that it was almost impossible to obtain a salt which did not contain free iodine. The large amount of water necessary to wash out the last portions of soluble iodide from the precipitates required considerable time in boiling to the crystallizing point, and the iodide of ammonium, an unstable salt at best, always suffered. It was desirable, therefore, to make use of a process involving as little delay in the manipulation as possible, and a method was finally adopted, which was described in the London Chemical News, April 9, 1864, and also in the American Journal of Pharmacy, May, 1864, p. 245. It is undoubtedly the best at present in use, being capable, with slight modifications, of producing a salt absolutely pure and free from the objections to which the previous processes I have mentioned are liable.

It consists in the double decomposition of pure iodide of potassium and pure sulphate of ammonia, both of which are easily procured. Iodide of ammonium and sulphate of potassa are formed, and the latter separated by the addition of 15 or 20 per cent. of alcohol, and the whole evaporated to the crystallizing point. I have found the following proportions to give satisfactory results:—

Iodide of potassium,	5	parts	by	weight.
Sulphate of ammonia,	2	“	“	
Water,	4	“	“	
Alcohol, 95 per cent.,	1	“	“	

The salts are dissolved by heat in the water, which, on cooling, deposits a large proportion of the sulphate of potassa, and

when at 60° F., is mixed with the alcohol, which separates all but about one per cent. of sulphate of potassa, and the concentrated solution of iodide of ammonium, after evaporation, yields crystals of perfectly white iodide. Subsequent addition of alcohol separates the whole of the sulphate of potassa from the mother liquor, which, on evaporation to dryness, furnishes an additional quantity of the salt. The evaporation should be performed in the dark, or in the evening by gas-light, to give the best results. The solution being very concentrated, requires but comparatively little boiling, and the precipitate of sulphate of potassa being crystalline, is easily separated by filtration.

The proportions stated above gave four parts of pure iodide of ammonium, which is nearly the whole of the theoretical quantity. Iodide of ammonium by this method remains white, if carefully dried, even on exposure to light and air for a considerable period, and has been found perfectly reliable in composition, and satisfactory in all its applications in photography and pharmacy. —*Proc. Am. Pharm. Assoc.*, 1866.

ON SUBSTITUTES FOR ETHER AND ALCOHOL IN THE PREPARATION OF THE OFFICIAL OLE-ORESINS.

By H. N. RITTENHOUSE.

The present exceedingly high price of alcohol and its products having become so serious a question to the pharmacist and chemical manufacturer, as well as the community at large, it has become an object of importance to devise, if possible, cheaper agents or more economical methods than are now employed in effecting the requirements of the Pharmacopœia in its products.

With the single object of economy in view, it had occurred to me, before accepting the above query, that perhaps benzine, glycerine or fusel oil might, in this case, be useful, to a certain extent, in effecting a saving of ether in the preparation of the official oleo-resins, by displacing the ether with them remaining in the dregs.

I have not in this paper aimed at giving exact results, chiefly because I had neither the time or appliances for doing so. The subject of this query, being an important one, has been, and

might be still further, profitably pushed in other directions where it would be of more importance than in this immediate connection.

The uniformity of the methods of preparing oleo-resins is such that what would apply to one would to all. I therefore selected cubebs for my experiments, it being the most important and the type of its class.

Without going into detail of the various trials, it will be sufficient to give the general results of my observations.

The Pharmacopœia directs 12 oz., troy, of cubebs to be percolated with ether until 24 fluidounces of percolate have passed. To obtain this quantity it is necessary to use about 36 fluidounces of ether, (the dregs retaining 12 fluidounces, or one-third the quantity used,) then recovering 18 fluidounces of ether by distilling the percolate. The dregs might also be made to yield some ether by distilling, where the appliances are at hand for so doing; but the labor and risk of accident is apt to counter-balance any saving from this source in most cases.

Four ounces, troy, of cubebs were packed in a funnel, and 6 fluidounces of ether poured over the surface in the usual way, and the funnel covered; when percolation had ceased, 4 fluidounces of benzine were added to the drug, and the percolation continued until 6 fluidounces of percolate was obtained, the last portions coming away almost colorless. Upon evaporating the last ounce spontaneously until it ceased to lose weight, twenty-five drops only of oleo-resin were obtained, while one ounce of the first four ounces, when treated in the same way, yielded two fluidrachms of oleo-resin, having all the characteristics of a good preparation without any odor of ether or benzine.

This experiment was repeated in various ways with glycerine, benzine and water, after the ether first added had ceased to pass, with about the same results, though the benzine was the most satisfactory. It was also tried with the other officinal oleo-resins, and the same general results obtained.

Benzine, I think, answers better than any other liquid as a substitute on account of its cheapness and volatile nature. In the quantity used, very little can pass into the percolate, and that little is easily dissipated. The percolation in one case was

continued after the first six ounces were obtained, but the odor of cubebs was very faint, and the color pale, almost colorless.

Prof. Procter, in the May number of the Journal of Pharmacy for this year, has given some important results in the preparation of the oleo-resin of cubebs. He there shows that the first percolate contains practically all or nearly all the medicinal virtues of the drug.

Dr. Squibb has also shown the same thing in his paper "On the Economy of Alcohol in the Preparation of Fluid and Solid Extracts," published in the March number of the same journal of the present year.

From the above reports, I think two conclusions may be drawn: 1st, That there is double the quantity of ether used in these preparations than is *absolutely* necessary; and 2d, That percolation may be stopped with advantage in this class of officinals much sooner than is now directed.

I do not claim that the drugs in this way are *thoroughly exhausted*, but for all practical purposes they are, and, as is seen, great economy will result in the use of the ether and alcohol directed to be employed. In short, "sacrifice the cheaper drug for the sake of saving the dear menstruum."

As these preparations do not, when finished, correspond in dose to any given quantity of drug, I think the following general plan might be employed with advantage:—

Take of the drug any convenient quantity; for each ounce thus employed, $1\frac{1}{2}$ fluidounce of ether, and one ounce or q. s. of benzine. Pack the drug in a suitable apparatus, add the ether, and when it has ceased to pass, pour on the benzine in the proportion of one ounce to each ounce of drug employed, or until as much percolate has been obtained as equals the amount of ether used. Recover the ether by distillation in the usual manner.

With care in watching the process, the contamination of benzine is so slight as to be scarcely perceptible in the percolate, and not at all in the finished preparation.

Glycerine may be used instead of benzine, if preferred, as, in case any of it passes through, it being insoluble in ether, is easily separated. The oleo-resin of ginger differing somewhat

in its preparation, I offer the following as a modification of the official process :—

Four ounces of ginger, (Jamaica,) or any convenient quantity, are to be packed in a suitable percolator ; to each ounce of drug add one ounce of ether ; when this has ceased to drop, pour on the dregs one ounce of benzine for each ounce of the drug ; when percolation has ceased, distil the percolate, and finish the preparation in the usual way.

The resulting oleo-resin will be found to be a good preparation in every respect, and this without the use of any alcohol at all. In my experiments I used a good commercial article of benzine, and a common glycerine of sp. gr. 1200. They can both be obtained at a very low price. By their use, I think Query No. 14 can be satisfactorily answered.—*Proc. Am. Ph. Assoc.*, 1866. *Philadelphia, August 15th, 1866.*

DEPARTMENT OF THE MOST IMPORTANT MEDICINAL ALKALOIDS WITH REAGENTS, AND A SYSTEMATIC METHOD OF EFFECTING THE DETECTION OF THESE SUBSTANCES.

(Continued from page 544, Vol. xxxviii.)

(From PROF. C. R. FREZENIUS' Manual of Qualitative Analysis.)

I. VOLATILE ALKALOIDS.

The volatile alkaloids are fluid at the common temperature, and may be volatilized in the pure state as well as when mixed with water. They are accordingly obtained in the distillate when their salts are distilled with strong fixed bases and water. Their vapors, when brought in contact with those of volatile acids, form a white cloud.

1. NICOTINA, or NICOTINE ($C_{10} H_7 N$).

1. Nicotina, in its pure state, forms a colorless, oily liquid, of 1.048 sp. gr. ; the action of air imparts a yellowish or brownish tint to it. It boils at 482° F., suffering, however, partial decomposition in the process ; but, when heated in a stream of hydrogen gas, it distils over unaltered, between 212° and 392° F. It is miscible in all proportions with water, alcohol, and ether.

Nicotina has a peculiar, disagreeable, somewhat ethereal, tobacco-like odor, an acrid, pungent taste, and very poisonous properties. Dropped on paper, it makes a transparent stain, which slowly disappears; it turns tumeric-paper brown, and reddened litmus-paper blue. Concentrated aqueous solution of nicotina shows these reactions more distinctly than the alkaloid in the pure state.

2. Nicotina has the character of a pretty strong base; it precipitates metallic oxides from their solutions, and forms salts with acids. The salts of nicotina are freely soluble in water and alcohol, insoluble in ether; they are inodorous, but taste strongly of tobacco; part of them are crystallizable. Their solutions, when distilled with solution of potassa, give a distillate containing nico ina. By neutralizing this with oxalic acid, and evaporating, oxalate of nicotina is produced, which may be freed from any admixture of oxalate of ammonia, by means of spirit of wine, in which the former salt is soluble, the latter insoluble.

. If an aqueous solution of nicotina, or a solution of salt of nicotina mixed with solution of soda or potassa, is shaken with *ether*, the nicotina is dissolved by the ether; if the latter is then allowed to evaporate on a watch-glass, the nicotina remains behind in drops and streaks; on warming the watch-glass, it volatilizes in white fumes of strong odor.

4. *Bichloride of platinum* produces in aqueous solutions of nicotina whitish-yellow flocculent precipitates. On heating the fluid containing the precipitate, the latter dissolves, but upon continued application of heat it very speedily separates again in form of an orange-yellow, crystalline, heavy powder, which, under the microscope, appears to be composed of roundish crystalline grains. If a rather dilute solution of nicotina, supersaturated with hydrochloric acid, is mixed with bichloride of platinum, the fluid at first remains clear; after some time, however, the double salt separates in small crystals (oblique, four-sided prisms), clearly discernible with the naked eye.

5. *Terchloride of gold* produces a reddish-yellow flocculent precipitate, sparingly soluble in hydrochloric acid.

6. Solution of *iodine in iodide of potassium* and water, when added in small quantity to an aqueous solution of nicotina, pro-

duces a yellow precipitate, which after a time disappears. Upon further addition of iodine solution, a copious kermes-colored precipitate separates; but this also disappears again after a time.

7. Solution of *tannic acid* produces a copious white precipitate, which redissolves upon addition of hydrochloric acid.

8. If an aqueous solution of nicotina is added to a solution of *chloride of mercury* in excess, an abundant, flocculent, white precipitate is formed. If solution of chloride of ammonium is now added to the mixture in sufficient quantity, the entire precipitate, or the greater part of it, redissolves. But the fluid very soon turns turbid, and deposits a heavy white precipitate.

2. CONIA, or CONINE ($C_{16}H_{15}N$).

1. Conia forms a colorless oily liquid, of 0.87 sp. gr.; the action of the air imparts to it a brown tint. In the pure state it boils at about 392° F.; when heated in a stream of hydrogen gas, it distils over unaltered; but when distilled in vessels containing air, it turns brown and suffers partial decomposition; with aqueous vapors it distils over freely. It dissolves sparingly in water, 100 parts of water of the common temperature dissolving 1 part of conia. The solution turns turbid on warming. Conia is miscible in all proportions with alcohol and ether. The aqueous and alcoholic solutions manifest strong alkaline reaction. Conia has a very strong, pungent, repulsive odor, which affects the head, a most acrid and disagreeable taste, and very poisonous properties.

2. Conia is a strong base; it accordingly precipitates metallic oxides from their solutions, in a similar way to ammonia, and forms salts with acids. The salts of conia are soluble in water and in spirit of wine, but nearly insoluble in ether. Hydrochlorate of conia crystallizes readily; the smallest quantity of this base, brought in contact with a trace of hydrochloric acid, yields almost immediately a corresponding quantity of non-deliquescent rhombic crystals, (TH. WERTHEIM). The solutions of the salts of conia turn brownish upon evaporation, with partial decomposition of the conia. The dry salts of conia do not smell of the alkaloid; when moistened, they smell only feebly of it; but upon addition of solution of soda, they at once emit a strong conia odor. When

salts of conia are distilled with solution of soda, the distillate contains conia. On neutralizing this with oxalic acid, evaporating to dryness, and treating the residue with spirit of wine, the oxalate of conia formed is dissolved, whilst any oxalate of ammonia that may be present is left undissolved. As conia is only sparingly soluble in water, and dissolves with still greater difficulty in solutions of alkalies, a concentrated solution of a salt of conia turns milky upon addition of solution of soda. The minute drops which separate unite gradually, and collect on the surface.

3. If an aqueous solution of a salt of conia is shaken with solution of soda and ether, the conia is dissolved by the ether. If the latter is then allowed to evaporate on a watch-glass, the conia is left in yellowish-colored oily drops.

4. Concentrated nitric acid imparts a fine blood-red tint to conia; sulphuric acid, a purple-red color, which subsequently turns to olive-green.

5. Terchloride of gold produces a yellowish-white precipitate, insoluble in hydrochloric acid; chloride of mercury, a copious white precipitate, soluble in hydrochloric acid. Bichloride of platinum does not precipitate aqueous solutions of salts of conia, the conia compound corresponding to ammonia-bichloride of platinum being insoluble in spirit of wine and ether, but soluble in water.

6. To solution of iodine in iodide of potassium and water, and to solution of tannic acid, conia comports itself the same as nicotina.

7. Chlorine water produces in a mixture of water and conia a strong, white turbidity.

8. If an aqueous solution of conia is mixed with a solution of albumen, the albumen coagulates. Aniline is the only other volatile vegeto-alkali which shows this reaction.

The volatile alkaloids are easily recognized when pure; the great object of the analyst must accordingly always be to obtain them in that state. The way of effecting this is the same for nicotina as for conia, and has already been given in the foregoing paragraphs, viz., to distil with addition of solution of soda, neutralize with oxalic acid, evaporate, dissolve in alcohol, evapo-

rate the solution, treat the residue with water, add solution of soda, shake the mixture with ether, and let the latter evaporate spontaneously. Conia is distinguished from nicotina chiefly by its odor, its sparing solubility in water, and its compôrtment with chlorine water, and bichloride of platinum.

ON THE SOURCE OF MUSCULAR POWER.

By E. FRANKLAND, Ph. D., F. R. S.

At the conclusion of an elaborate paper, Dr. Frankland remarks :

We thus arrive at the following conclusions :—

1. The muscle is a machine for the conversion of potential energy into mechanical force.
2. The mechanical force of the muscles is derived chiefly, if not entirely, from the oxidation of matters contained in the blood, and not from the oxidation of the muscles themselves.
3. In man the chief materials used for the production of muscular power are non-nitrogenous ; but nitrogenous matters can also be employed for the same purpose, and hence the greatly-increased evolution of nitrogen under the influence of a flesh diet, even with no greater muscular exertion.
4. Like every other part of the body, the muscles are constantly being renewed ; but this renewal is not perceptibly more rapid during great muscular activity than during comparative quiescence.
5. After the supply of sufficient albuminized matters in the food of man to provide for the necessary renewal of the tissues, the best materials for the production, both of internal and external work, are non-nitrogenous matters, such as oil, fat, sugar, starch, gum, &c.
6. The non-nitrogenous matters of food, which find their way into the blood, yield up all their potential energy as actual energy ; the nitrogenous matters, on the other hand, leave the body with a portion (one-seventh) of their potential energy unexpended.
7. The transformation of potential energy into muscular power is necessarily accompanied by the production of heat within the body, even when the muscular power is exerted ex-

ternally. This is doubtless the chief, and probably the only source of animal heat.—*Am. Journ. Science and Arts*, November, 1866.

WASTE OF PLATINUM IN SULPHURIC ACID MANUFACTORIES.

Some few years ago, M. Scheurer-Kestner, of Thann, made some careful researches as to the *amount* of the waste of platinum in sulphuric acid manufactories in which platinum alembics were used, and he found that, in an apparatus which, when regularly worked, yielded 4,000 kilogrammes of concentrated acid per day, each 1,000 kilogrammes of acid dissolved and carried away about two grammes of platinum, when the acid was tolerably free from nitrous vapors, and as much as four or five grammes of platinum when the acid was no freer from nitrous vapors than it is usually. He accordingly recommended that sulphate of ammonium should always be added to the sulphuric acid in the alembic, that salt being decomposed by the nitrous vapors, and its base combining with them and thereby rendering them inert. He found that the waste of platinum was very greatly diminished when this expedient was adopted. He found, too, that *new* alembics undergo less rapid waste than those which have been in use for some time, freshly-hammered platinum being more compact, and so less easily attacked by solvents, than platinum which has been long in use. Another most interesting fact which he established is, that platinum containing iridium is much more durable than platinum alone. He put into a still kept constantly at work, and so kept immersed in boiling sulphuric acid for two months, two capsules, one of pure platinum, and the other of platinum alloyed with iridium. At the end of the two months the capsule of pure platinum was found to be greatly deformed and its surface considerably corroded, and to have lost 19·66 per cent. of its weight, while the capsule of iridio-platinum retained its original form and brilliancy of surface quite unimpaired, and had lost only 8·88 per cent. of its weight. Since then, nearly all the platinum worked into alembics on the continent has been alloyed with a small portion of iridium.—*Journal of the Franklin Institute*, December, 1866, from *Lond. Mech. Mag.*, April, 1866.

THE PHARMACEUTICAL BUSINESS—ITS MANAGEMENT.

BY F. STEARNS.

This theme, given me for an essay, I find upon reflection, if looked at as a commercial problem, is one which, for the whole of my own business life, I have been earnestly trying satisfactorily to solve, seemingly as far from that end now, at the end of at least the first half of a long business life, as at its beginning.

In confessing this, I had rather offer myself your pupil than teacher, and only the duty I owe you in accepting a query, induces me to pen a thought or so.

The ethical relations of Pharmacutists and their æsthetical culture having been touched upon in former papers presented you, I will suppose that the *executive skill* exercised in conducting our business so as to make it successful pecuniarily is the real point in the query.

Slight observation shows to us that men are so different in ways of conducting the same business, that we find many distinct yet parallel ways of reaching the same end—pecuniary success. Each way may be consistent in itself, yet no two harmonious or rather consistent one with another.

Side by side does the penny wise and pound foolish man gather to himself money, and equally fast, too, with him who, of enlarged generosity and liberal tastes, deserves seemingly the largest reward. And in this race for substantial moneyed success, the intelligent man who prostitutes his profession in the employment of all means of quackery and dissimulation, often keeps pace with him who, having the same intelligence, energy and tact, strives to square his duty to the public by his actions toward that public. Perhaps in most instances the first one wins.

Of course the above comparison does not include conscientious considerations; it is rather drawn to show that when pecuniary success is the greater aim these widely apart parallels all lead to it. Again we see men who strive to be all things to all men, with whom "*policy is the best honesty*," who do try to leaven their course of business with a dash of righteousness, and do so cloak it with *hypocrisy* as to fancy after all that *they* only have discovered the happy, middle business course, which ends in moneyed success.

So far in life I am deluded with the fancy of considering money as a means not an end, and while I look with pity mingled with contempt on him in whom its possession merely is the sole gratification it affords him, it offers a pleasant contrast to turn to him of enlarged understanding, and liberal tastes who, the happy possessor of fortune, is the almoner of his own charities and patron of the noble in art.

It is an unquestioned fact that correct habits of life, such as diligence, temperance and the possession naturally of the qualities of energy, perseverance and hopefulness, as well as an understanding of the science of economics, are business requirements, regarded as necessary to moneyed success in ours, as in all other arts.

Rarely do we find in one person all these attributes, and as a consequence our fortunes vary.

Let me illustrate by examples. We find *A.* in business makes money rapidly, has a great run of trade, is looked upon enviously by the lesser lights, so called, yet this man may, by having no ideas of how economically to manage, save or invest his gains,—he either cares not or knows not—eventually lose the results accruing from his energy and power, while his neighbor, *B.*, with less facilities in every way, poorly educated, no capital, by means of perseverance and by the economical management of his gains, contrives to come out the winner in this moneyed race.

C. has a noble store in a popular street, elegantly fitted, in a large city, caters for what is called a first class trade, large expenses, extravagant ideas, works hard himself, always behind his counter, bids high for the patronage of his medical friends by gifts, perquisites and percentages, is in a constant and chronic condition of hurried business excitement, is royal in his subscriptions, fine in his living, does not stop the small leaks in his profits, is reckless in slow expenses, leaves his finances to some one not at all interested, is showy in expenses, abounds in non-paying attractions; compelled by these very items to *urge* business, to do a *large* business, the profits to the money he handles bears no fair proportions, so he leaves his condition in mourning once in five years.

D. has a small shop, less knowledge, but is bound to win; sells

what he can get to sell ; his own, only clerk, lives closely, sleeps in the place if single, lives over it if a man of family, always there, no time for church-going, or politics ; gives twenty-five per cent. to his medical friends for the run of their prescriptions ; if *C.* sells paregoric at 10 cents the ounce he sells it at 8 cents ; the only extravagance he is guilty of is a *mental one*, that of believing himself to be, by so doing, a protector of the public from the swindling of his neighbor druggist, shouting in the street "buy of me, the public benefactor." And so he wins.

E. has the same small shop ; bought it out, thinking that as he made a cool thousand or so in the corner grocery trade or as army sutler, he can sell drugs as well as sugar or tobacco. Proprietary nostrums being a perfectly safe field to work in, he cultivates it—has a whole *Materia Medica* bottled and boxed ready to his hand, and with the same honeyed eloquence that pushed the sale of sugar and tobacco he assists the sale of them ; a familiarity with half of one per cent. of the words of the English language enables him to convince his customers that this that and the other of his is a little the best and a little the cheapest. Of course this *E.*, with no other aim, or no other knowledge, is building blocks of dwellings in the way of investment in a score of years or so.

To return to our subject, the proper management of Pharmaceutical business consists, in part, of knowing how to buy crude stock ; convert this into saleable commodities ; preserve it when so converted ; handle stock with system and rapidity ; and how to systematize and simplify office and financial duties. Other equally important ones, scientific education and experience are presumed to be possessed, so I pass to a moment's consideration of the points first named.

Purchase of stock : the dispenser in large places will best buy at home, at least so far as his market will let him, in limited quantities and often ; this keeps the stock reduced in total value, while it may reach the fullest assortment and be always fresh. A saving of interest on an investment in a large idle stock, a good assortment of goods, though limited in quantities, well kept in hand (that is, remembered), will pay much better pro-rata than the vice-versa rule.

He who is more remote from a good market finds it necessary to buy in larger lots and, of course, with no greater capital than he of a city, must accordingly lessen his assortment. I have always thought it poor policy in the beginner in a small village, for the sake of making a show in doing business, to drag into his stock a lot of *groceries* or *paints* and *oils*, when the same capital invested in increasing his assortment of goods in our legitimate pursuits, while it would lessen perhaps the aggregate of his sales, would, in nine cases out of ten, increase his profits in a like proportion. Is it better to sell thirty thousand dollars per annum handling coarse goods to make up the bulk of it at no profit, or to sell half that in our line of goods with a profit equal to that on the former.

The judicious buyer who (supposing him to be a western man) goes to the larger markets twice or three times a year will devote considerable reflection upon his list of wants; a schedule of his purchases of the principal items during each year for previous years will assist in judging of quantities required. If the list be long and the purse narrow, of course proportions are to be still more carefully considered, if independent of this, those periods of general stagnation which occur from a thousand causes, often each year, for a few days or weeks are inviting in which to buy. It is only, however, the large operators, with unbounded capital, who are in the markets themselves, that can feel its pulse, and corner it too, that can take the real benefit of such ebbs and flows of trade tide.

When practicable, goods slowly bought, that is, more reflectingly, are better bought; do not crowd the fair work of a week into two days.

A knowledge of the value of the leading drugs, etc., in each month for the year and preceding years, affords a good rule to guide you in getting the best average how to buy.

In these days a system of brokerage has sprung up which is of much assistance to all buyers in the interior; men who, for a small commission, will purchase your list of wants perhaps better than you could yourself, by knowing the best sources of supply better than you.

He whose business is increasing and whose gains enable him

to, can in no way better invest his surplus profits than in buying the more staple or non-perishable articles of his stock in *original* packages; the difference is always so considerable, and, in fact, constitutes the profit of him who is called the jobber, who is between the importer or package dealer and the small buyer.

The druggist who possesses the appliances on his own premises to manufacture to any extent the various pharmaceutical products, etc., that his business requires, will certainly buy stock only in primary form, and save by such conversions the profit of him who manufactures for those who do not make for themselves.

This point of manufacturing in each shop all that is possible to make, so far as skill and appliances go, is so obvious that nothing farther need be said concerning it.

A means of economy lies in the proper arrangements to preserve stock, until it is sold, from the ravages of vermin, the effects of dust, heat, light, moisture, etc. Necessity has led many a thoughtful one in our line to devise means to this end, and throughout our periodicals and in our text-books you will find numerous suggestions bearing upon this point, so that hardly a preparation or drug but has in its history, description or formula, suggestions to this end. And this brings up the subject of our drug literature, as affording continually in its periodicals hints and suggestions of great economic value; it is, then, economy to be a liberal patron to these.

As an efficient source of economy lies in the facility of doing a large amount of labor with a comparatively small amount of clerk help, this facility may be and is to be only acquired by the systematic arrangement of stock and store fixtures so as to save every possible step, and to facilitate by every practicable means the rapid handling of goods. Every one who has been in business some years, knows by experience how improvements bearing on this point are continually forcing their necessity on him; this is instanced in the arranging of shop drawers and ware in a retail store, with reference to the center scale counter, so that those items most often required shall require the fewest steps to reach, and in the dispensing department by having the same drug in its various forms for instant admixture, enabling one in preparing recipes to dispense with much of the preliminary labor. I can

only here example this in having quinia and morphia in solution of known strength, of chalk mixture dry mixed, ready for the liquid adjuvant, of roots, seeds, barks, ready contused, etc.

Finally, in regard to finances, in that department devoted to book-keeping, to collecting your dues and paying your debts, simplicity of system, promptness, fidelity to one's own interest, exactness in dealing with others, joined to a spirit of concession and liberality in disputes, occur to me as executive means of success. General economic law governs all business, others as well as ours, and the study of how our most successful neighbors gain their ends under this law will afford many a suggestive hint of how to go and do likewise.

If at the end of life we confess to ourselves bitterly, ours to have been an unsuccessful one, let us not look abroad as the reason for it, but at home, and charge it to the absence of those natural attributes necessary in all to insure success in any walk of life.—*Proceedings Amer. Pharm. Assoc.*, 1866.

NOTE ON THE CULTURE OF SAFFRON IN PENNSYLVANIA.

BY CHARLES A. HEINITSH.

Crocus Sativus.—Saffron, until the last few years, was cultivated in Lancaster County, Pa., to considerable extent, particularly amongst the German portion of its inhabitants, for its use as a flavoring and coloring ingredient in soups and tea, and as a domestic remedy for measles and other febrile diseases, besides making an ornamental flower-bed in their gardens.

Saffron requires a rich soil to grow it abundantly. The usual mode of cultivating it is to prepare the bed by digging deep and filling up with manure and rich soil, planting the corms or bulbs, after separating the young from the parent,* about eight inches apart in rows, (similar to onion sets,) in the month of August. Care is necessary to keep the beds free from weeds.

The flowering season commences about the middle of September, and continues until the beginning of October, according to the locality of the bed. The flowers are picked off early in the morning; the stigmas separated and dried in the shade. This

* The young corms or offshoots are attached similar to those of *colchicum*.

continues every day until the season ends. The leaves remain green all winter. The following June the beds are cleansed from the decayed leaves, and left until renewing time in August.

Saffron must necessarily be dear, says Mr. Bently, in an article on adulterations published in last May's number of *Journal of Pharmacy*, because it takes a great number of flowers to make a pound; and there are other causes, viz., failure of crops from excessive rains or drought, and attacks of the field mice, which destroy the bulbs. But withal, when we remember that all our products of the garden and farm are liable to failures from various causes, though probably not to such an extent, I think it can be profitably raised, judging from the following two calculations, taken as an average:—On inquiry from some of the growers, one informed me that about 3,000 flowers, or 9,000 stigmas, can be raised off a bed 12×6 feet = 72 square feet. Another, that often in a good season between 2,000 and 3,000 flowers can be had in one morning's picking off about 500 square feet, and this continues for a number of mornings, though not always with so large a number. These two make about the average result of experienced growers.

In counting and weighing the stigmas, I find, after several trials, that 300 weigh 13 to 14 grains, which would be a yield of about 420 grains to 72 square feet, or 33 to 36 pounds to an acre. If these calculations only approximate to correctness, at present prices it will be very remunerative to the grower in comparison with many other products.

Specimens of the stigmas and corms are submitted.

Lancaster, Pa. —*Proc. Amer. Pharm. Assoc.* 1866.

ON THE INFLUENCE OF HYPODERMIC INJECTION UPON THE SCIENCE OF TOXICOLOGY.

BY S. P. DUFFIELD, PH. D.

So wide has been the beneficial influence of improvements in chemical analysis, that it would be superfluous to attempt to make any further observations on the important part performed by this branch of the science.

When medicine, in earlier times, stepped forth and claimed pre-eminence and respect, while the untiring alchemist, with his

furor, furnaces and fumes, sought for that elixir which should place eternity within his control, she was then encircled by the *fancies* of her speculative philosophy, encumbering the studies of all her collateral branches.

But in the present age, the exact methods of investigation have plunged her again into a new labyrinth of untenable theories.

The famous trial of Palmer, in England, for poisoning his victim with strychnia, drew all chemists to investigate most thoroughly the behavior of this alkaloid to chemical reagents, and we now have very full data and methods which render its detection and recognition quite easy and simple.

The beautiful system of dialysis by Graham has been another step in advance, and can truly be called one of the esthetics of toxicology, divesting it, as it does, of the circuitous and very unpleasant course heretofore pursued in examining the viscera of a poisoned subject. But brilliant and rapid as have been the advances in this department of chemistry, those very discoveries have turned up new obstacles to be overcome.

Of late years, a system of introducing remedial agents into the circulation more rapidly than can be done through the agency of the stomach bids fair to place in the hands of designing persons a power which has never before been possessed by any within or without the profession of medicine. I refer to the system of hypodermic injections, becoming now so deservedly popular with the "regular medical profession."

This system owes its success to the facility with which poisons are introduced into the blood.

From the earliest times, *blood* has been a favorite topic.

Moses, in accordance with the views of the ancient Egyptians, placed the seat of life in the blood.

One might, therefore, reasonably have expected that a subject which had played such an important part in medicine would have had more than empirical supports on which to base some degree of accurate knowledge.

When we remember that only three-fourths of a century ago oxygen was unknown to the chemist, we can readily perceive why former investigators were powerless. Even to physics,

which had solved some of the great astronomical problems, the phenomena of the animal organism were a sealed book.

Albinus took no meagre view of organic activity in nature when he established the axiom that the essence of life, or the vital force, consisted in *motion*.

Changes are continually going rapidly forward in the living body; physical forces are always striving for the equilibrium; the matter set in motion by them finds its centre of gravity—its point of rest. Force is nothing more than the expression of the causal action of natural laws; and if facts do not accord with *our* laws, we have either formed false opinions, or have imperfectly investigated the different circumstances under which they were exhibited.

Within the past few years the science of toxicology, as developed by the German and French chemists, has attained an accuracy which is surprising, when we contemplate the crude state it was in fifty years ago. But rapidly as has been its progress, there has suddenly arisen a barrier to its advance, more formidable than any it had to meet before.

Friedberg and Ritter mournfully acknowledge that the day has not yet arrived when we can detect the difference between dried human and ox blood. A few enthusiasts have claimed a *peculiar odor* to different kinds of blood; but these tests stood on so slender a foundation, and required an almost *hyper-excited* nose to detect them, that no conscientious expert will, for one moment, depend on it for convicting the criminal. The microscope, with its polarizing prism, is not able to distinguish between the most of domesticated animals' blood and that of man, after it has been dried any length of time.

We are not able at the present day to detect *absorbed* alkaloidal poisons, and that is the fact forming the subject of this essay, and to which I wish most particularly to call your attention. There can be no doubt that these powerful agents, of which strychnia and morphia are the types, are absorbed into the blood, and diffused throughout the system, like other poisons. There seems to be a want of unity in the statements relative to their deposition in the viscera, and their subsequent elimination. M. Stas, in 1847, announced the discovery of the alkaloid in

the tissues; but it is questionable whether this was not some portion of the nicotina which had been *imbibed* rather than absorbed. Referring to his process, with which all analytical chemists are familiar, he says he has separated strychnia and brucia from nux vomica, veratria from extract of veratrum, emetina from extract of ipecac, colchicina from wine of colchicum, hyoscyamia from extract of henbane, and atropia from extract of belladonna. Some of the poisons mentioned here will destroy life—the fraction of a grain. Mr. Morson, of England, prepares aconitine, of which $\frac{1}{14}$ of one grain is the full dose, and says that perhaps the $\frac{1}{50}$ would prove fatal to an adult. Where is the analytical chemist who could separate, in quantity enough to give reliable color tests, and obtain crystals, visible even with the strongest microscope, this $\frac{1}{50}$ portion of a grain, after it has been thoroughly transfused through twenty-eight pounds of blood, and all the tissues and organs of the body? He who has this power can detect, and separate, and weigh the specific poison of rabies or of the rattlesnake, and could justly be classed as a rival of Omnipotence itself.

Among numerous cases of poisoning by opium or its alkaloids which have fallen to my lot to examine and depose on, I cannot conscientiously say that I ever detected *absorbed morphia*.†

The same remark will apply equally to strychnia, and I cannot see how some men will state definitely they can separate *absorbed strychnia*, but have never dared to undertake the task; knowing that the patient dies from the poison absorbed, they, while claiming they can detect and separate *absorbed* poison, contented themselves with extracting the contents of the stomach. When we look back, we find that up to May, 1856, as regarded the detection and separation of strychnia, *chemical science was*

* Equals the $\frac{1}{50000}$ of a grain, assuming *only* the blood contains it. If diffused through the whole body, allowing 128 pounds for the tissues, it would then be reduced to the $\frac{1}{4480000}$.

† In the case of a woman who committed suicide at one of our hotels, and whose stomach was handed me immediately after death, I was able to separate only two grains, when she had actually taken ten grains. Again, the case of a homœopathic physician, who gave solution of morphia, I detected the $\frac{1}{2}$ of a grain in a teaspoonful of the solution, and could only get a color test for morphia from the stomach.

a blank. In no one instance before this date had strychnia been obtained from the tissues of the corpse, and, in the greater number of cases, it had not even been found in its unabsorbed state in the stomach.

With respect, therefore, to the separation of the vegetable poisons from the blood and tissues, the results are very unsatisfactory. We look in vain in the treatises of Orfila, Kopp, Christison, and in the more recent works of Gaultier, Flandin, Casper, Otto of Braunschweig, and Böcker, for any instance in which they claim absorbed strychnia to have been detected either in the human being or in animals; and, in this particular, strychnia is but a type, for the same remarks hold good of the other alkaloids.

Dr. Harley, of University College, examined the blood of a dog killed by the $\frac{1}{12}$ of a grain of acetate of strychnia injected into the jugular vein. The blood, after the death of the dog, gave no evidence of strychnia. Mr. Horsely, of Cheltenham, examined the blood and tissues of a dog which he poisoned with two grains of strychnia, and could not detect its presence. Dr. De Vry, of Rotterdam, poisoned a dog with nitrate of strychnia, introduced into a wound, and, after its death, he examined four ounces of blood, but not the least trace of strychnia was detected. In another case, in which a dog was poisoned in four days by half a grain of strychnia in divided doses, the chemical analysis led to a negative conclusion, not only in the blood and tissues, *but in all parts of the body.* Dr. Crawcour, of New Orleans, gave a rabbit half a grain of strychnia; the animal died in half an hour. No trace of the poison was found in any part of the body. In a case of poisoning which occurred to Dr. Geoghegan, of Dublin, in 1856, thirty ounces of urine, which had passed the patient from the fifth to the thirty-first hour, when carefully analyzed, did not yield any trace of strychnia. A case of great bearing upon this subject occurred to Mr. Wilkins, of Newport, in the Isle of Wight, in February, 1857. A gentleman died in six hours after taking about three grains of strychnia for the purpose of self-destruction. The long period he survived was most favorable for the diffusion and deposition of the poison. The blood and heart were examined by Dr.

Taylor and Mr. Scanlan, portions of the liver and lungs were examined by Dr. Christison and Dr. Douglass MacLagan, of Edinburgh, and one kidney was examined by Dr. Geoghegan, of Dublin. The result was no trace of absorbed strychnia was detected in any one part. In reference to the detection of other alkaloids in an absorbed state, there is an absence of facts. That they enter the blood by absorption is placed beyond a doubt; but whether, when there, they are partially changed, or deposited unchanged in the organs, has not yet been satisfactorily determined by experiment. Dr. De Vry has made recently experiments on the alkaloids, and arrives at the conclusion that that part of the alkaloid which acts mortally is decomposed in the living body. The examination of a large number of cases in the human subject can alone determine perfectly this most important point in toxicology.

Be that as it may, we are absolutely certain of a failure in attempting to detect the poisonous alkaloid atropia in the blood, if administered by hypodermic injection, as it would not require more than one-half a grain to prove fatal. Analytical chemistry, which has, up to this time, occupied so prominent a position, and been so ably associated with forensic medicine, is now perfectly powerless. She cannot solve this problem. There may come a time when more accurate methods and more delicate reagents may lead us to a satisfactory solution of it. Heretofore she has been the Nemesis which pursued, with outstretched, grasping hand, the murderer. That hand has been paralyzed by this bold application of principles of chemical physiology in the treatment of disease. The only means now of detection will lie in the testimony of the physician of the symptoms observed by him at the bedside of the dying person.

Synthesis is far ahead of analysis, and we must admit that this is a problem of great importance, and to which the attention of toxicologists should be turned. For the present we must say, as we stand groping on the confines of mortality, and straining our powers to discover in the broad, measureless eternity some means of controlling the moral effect of this fact, and some law which may lead us to processes of detection, that just now we realize how helpless the human mind is, how

utterly futile has been its attempt to discover a mode of detection. In future many a throbbing heart will suddenly cease, and no eye but God's be able to detect the murderer. For the present too much weight cannot be given to the testimony of the medical witness at the bedside; if that is not had, and no physician was near at the time of death, we are cast to drift upon an unexplored and perhaps a shoreless sea.

Medical testimony now becomes all-important, and chemical testimony wanes in value, for no satisfactory results can be obtained. Juries will now, more than ever, be dependent upon circumstantial evidence.

Mortifying in the extreme as it is to our professional pride, stripped of professional honors in medico-legal investigations, the chemist and toxicologist now, if never before, realize the truth that comes floating to us on the dying breath of La Place—"What we know is little, and what we are ignorant of is immense."—*Proc. Amer. Pharm. Assoc.* 1866.

ON SOLUTION OF ACETATE OF AMMONIA.

BY WILSON H. PILE, M. D.

QUERY 30th. What is the most perfect and reliable process of manipulation to produce liquor ammoniæ acetatis pure, and in a neutral or slightly acid condition?

This question is one which at first sight appears rather uninviting, and devoid of interest; it being a case of simple chemical union of its elements. The directions given in the Pharmacopœia for its preparation are also so concise and devoid of ambiguity, and, in chemical language, so determinate, that it might be supposed the result would always be satisfactory in a pharmaceutical point of view. And yet the contrary to this is more frequently observed. The principle is well understood—the practice is not so readily followed; and on this account probably few preparations will be found to vary more in their sensible properties than this one. Although the writer has not been able to devise any practical method by which a solution of acetate of ammonia can be prepared with perfect uniformity, and therefore so far has failed in giving a satisfactory answer to the query submitted to him, yet perhaps the observations

which he has thrown together may prove of some interest, and will be accepted instead.

The subject, then, may be considered both in a chemical and pharmaceutical point of view, and first we will briefly allude to the pure salt in solution before entering on the main inquiry.

Solution of acetate of ammonia was first described by Boerhave, in 1732. It was also introduced into medical use by him. He prepared it in a similar manner to that followed now, by saturating the purest vinegar with carbonate of ammonia. Subsequently, Minderer, a Scotch physician, by bringing it further into notice, claimed the honor of its discovery, and the solution was hence known as "Spiritus Mindereri."

The difficulty of preparing a neutral solution, as well as the uncertainty of its strength, was early observed; and in 1773 Baumé endeavored to obtain the solid salt by concentrating the solution. In this he failed, having to encounter the difficulty of the salt being readily decomposed by heat while in a moist state,—the ammonia being first given off, and subsequently the acetic acid. Berzelius, by uniting equal weights of dry sal ammoniac and acetate of lime, and subliming by a carefully regulated temperature, obtained the dry salt by double decomposition.

In a pure state, acetate of ammonia is a white crystalline salt, easily deliquescent in a damp atmosphere. If this dry salt be dissolved in hot water to full saturation, and enclosed in flasks, upon cooling slowly the pure salt crystallizes in long acicular crystals. In this state it appears to have an acid reaction.

To prepare the solution of the salt, however, more directly, its constituents may be immediately combined:—solution of acetic acid and solution of ammonia. If these are pure and the mixture rendered perfectly neutral, the solution may be considered pure. In this state it is not a permanent salt, except in perfectly full bottles, hermetically closed. In partially full vessels at ordinary temperatures it gradually changes, the acetic acid becoming decomposed, vinegar animalcules appearing, and the solution becomes alkaline, carbonate of ammonia being thus generated.

The medicinal solution of acetate of ammonia,—liquor ammoniæ acetatis, or spirit of Mindererus,—is directed to be made, by our National Pharmacopœia, by saturating dilute acetic acid with carbonate of ammonia; and it is ordered, when dispensed, to be freshly made, the solution then containing a portion of the liberated carbonic acid gas.

In regard to the exact amount of each of the constituents to be employed in the above process, it happens unfortunately that neither of them is found in any very definite state of composition.

The sesqui-carbonate of ammonia, varying continually from exposure, absorbing carbonic acid and losing ammonia, becomes a bi-carbonate, so that only the translucent pieces in the interior of a lump have any very near approach to a definite chemical compound. The acetic acid, although permanent, is made with little uniformity, and its strength can only be ascertained by chemical tests. It follows, therefore, in carrying out the directions of the pharmacopœia, we are under the necessity of falling back on that responsible, and, to many, vague phrase, of *q. s. ad saturandum*. As the amount of salt in this solution depends entirely upon the strength of the acetic acid employed, apothecaries should be aware that acid of a proper strength is not readily obtained. Acetic acid No. 8, sp. gr. 1.047, is rarely met with; the article usually called No. 8 being generally only No. 6,—*i. e.*, one pint to make six of officinal dilute acetic acid. The precaution, therefore, of diluting to a lesser extent when weaker, should be strictly observed.

The acetic acid employed in this preparation should be entirely free from empyreumatic odor, derived from the pyro-ligneous acid, from which it is generally obtained. If free from this and other impurities, it should be diluted with pure water until its density be reduced to 1.007 at 60° F.; the ordinary No. 8 acid requiring about five times its bulk of water to dilute it sufficiently. In taking the specific gravity of liquids varying little from the density of water, particular care should be observed in reducing the temperature of the liquid to 60° F. Otto's acetometer will, however, be found a more reliable method of determining the strength of acetic acid,—the princi-

ple of which is, neutralizing the acid with a normal solution of ammonia; the quantity of the ammonia employed indicating directly the percentage of the acetic acid,—assuming that 100 grains of the officinal dilute acetic acid must saturate 7·6 grains of cryst. bi-carbonate of potassa. This will be equivalent to 4·55 per cent. of mono-hydrated acetic acid, (Wood & Bache give 5 per cent. as the strength). Acid of this percentage has a specific gravity of 1·0068 at 60° F., when accurately taken.

Having the acetic acid properly diluted, the directions of the Pharmacopœia are to add the carb. ammonia gradually to the acid, until this is saturated. It is just here that a practical difficulty occurs, in determining the exact point of saturation. At first the taste will sufficiently indicate if the solution is yet acid, but as the point of saturation is approached, litmus paper or solution of litmus must be resorted to. These, if proper precautions are taken, will give sufficiently accurate results. It will be observed, in testing liquids containing free carbonic acid, that litmus will be reddened, even after the solution is neutralized by an alkali. This reddening, however, is not permanent, but will disappear upon drying the paper, the carbonic acid going off with the moisture. This source of fallacy may also be overcome by gently warming a portion—say half an ounce—of the solution, to which a few drops of the solution of litmus has been added. The red color of the solution will gradually change to a violet, indicating the fact of its alkalinity. If now dilute acetic acid be dropped in until the color is slightly reddened, the number of drops required will give the proportionate amount of acid to be added to the remainder of the solution. If, on the contrary, the solution when heated should remain red, aqua ammoniæ should be dropped in until the color just begins to change, the number of drops indicating, as before, the amount requisite for the whole solution.

It has been proposed, in order to avoid in a measure the uncertainty above alluded to, to saturate the strong acid No. 8 directly with carbonate of ammonia, and afterwards to dilute to the proper degree.

Made in this manner, there is much less difficulty in ascertaining the point of saturation, no carbonic acid being retained in the solution.

The German and British Pharmacopœias order the liquor ammoniæ acetatis to be made by the union of strong acetic acid and concentrated aqua ammoniæ; the former adding water to the neutral solution until its density becomes 1·035. The British Pharmacopœia employs it undiluted, of specific gravity 1·060; made in this way, the solution is nearly four times the strength of our own. It is also much less liable to decomposition, and no difficulty occurs in preparing it neutral, there being no carbonic acid in the solution. In commenting upon this process, Prof. Bache, alluding to the absence of the carbonic acid in the solution, says, that "a great benefit remedially is gained by its presence, which reconciles the stomach to the medicine, and sometimes even allays vomiting in febrile diseases." With this view of the subject, and believing that the remedial efficacy of a medicine should always be esteemed of the highest importance, and, in fact, as constituting its only value, I suggest the following method of preparing the liquor ammoniæ acetatis; a modification of the officinal directions, yet following strictly its spirit.

A solution of the translucent internal portion of sesqui-carbonate of ammonia is to be made according to the following data:

The pharmacopœia gives 7·6 grains bi-carbonate of potassa as the quantity necessary to saturate 100 grains of dilute acetic acid, or nearly 34·9 grains per fluidounce. As the equivalent saturating powers of bi-carbonate of potassa and sesqui-carbonate of ammonia are respectively 100·2 and 59, it would therefore require 20 grains of this latter to saturate one fluidounce of dilute acetic acid. The solution of ammonia I make of double this strength, or 20 grains to half an ounce of distilled water,—the other half-ounce requiring to be made up of a dilute acetic acid of double the officinal strength. It is in preparing this acid solution of proper strength, that the only practical difficulty lies. The method I have taken is the following: from a pipette graduated into 100 parts and filled with No. 8 acetic acid, I drop sufficient of the acid to neutralize 100 similar parts of the prepared ammoniacal solution. The quantity requisite is noted, and that amount of acid must consequently

be made to measure 100 parts, by the addition of sufficient water. Thus, if 30 parts of acid were necessary to saturate 100 parts of the ammoniacal solution, then to every 30 parts of acid add 70 parts of water, and the solution is ready for use. The solutions keep well, and it is only necessary to mix them in equal quantities to produce an effervescent draught of neutral acetate of ammonia, retaining the free carbonic acid so desirable as a remedial agent.—*Proc. Amer. Pharm. Assoc.*, 1866.

ON AMERICAN OPIUM.

BY ISRAEL J. GRAHAME.

At the meeting of the Association last year, (1865), specimens of "Virginia Opium" were presented for examination by W. H. Schieffelin & Co., of New York. At the request of the Association I accepted these specimens for the purpose of a morphio-metrical analysis, as upon the proportion of opium's most important alkaloid—morphia—that any specimen shall contain, should the medicinal value of the drug alone be estimated. The quantity of this, therefore, together with that of narcotina, have been the principal objects of my investigations.

Before proceeding with a statement of my experiments, I would remark that these specimens of opium, one made in 1864 and the other in 1865, were manufactured by Powhatan Robertson, Campbell Co., Virginia, from the capsules of several varieties of poppies grown by himself, as will be seen from the following extracts from a letter on the subject received from him by W. H. Schieffelin & Co. :

"The Virginia Opium was made from poppies of almost every variety—the single variety, however, with purple spots on the petals, predominating. This variety of poppy seems to yield more opium than the double, and its seed capsules are of a shape that makes the collection of the opium less troublesome."

"The capsules should be incised longitudinally about three or four days after the flower has dropped. The incisions may be repeated several times on the same capsule; they should be made in the evening and the opium scraped off next morning.

There was no bad effect observed by the person who collected

this opium, but there was only a small quantity made, not more than eight or ten ounces, and not more than one hour's time was occupied every morning for about three weeks."

"I can form no reliable opinion as to how much an acre would yield, from the fact that only a small piece of very rich land (formerly an asparagus bed) was used, and the poppies did not come up at all regularly, nor was all the opium made that might have been."

"The seed should be drilled in rich land, in August or September, leaving room for a person to pass between the rows, and the plants to be thinned out in the spring so as to stand about eighteen inches or two feet apart." * * * *

In relation to my experiments, I have to regret at the outset that I had not in the first instance more fully considered my subject, and divided the small amount of material at hand into several portions, with a view of not only repeating the process used, for the extraction of the two important alkaloids referred to, with certain modifications, so as more correctly to ascertain the true percentage of these, but also for the purpose of ascertaining the relative proportion of these yielded by each year's product; the quantity of soluble matter yielded by each to different menstrua, and other minor points of interest in connection with the investigation of a substance of so much importance as opium produced under the circumstances of these specimens.

It was not, however, until after I had nearly completed my experiments that I took this view of the subject, which was then too late for my purpose, having already submitted the quantity I received to the two processes about to be described.

The opium in question presented physically the appearance of a good article as compared with the best varieties of the imported drug, not, however, possessing the characteristic odor in so marked a degree. I would here observe that the sample of opium marked as being made in 1864, possessed not only the peculiar smell of opium in a higher degree than the sample made in 1865, but also a nearer approach in color to that most highly esteemed in the foreign drug.

One of the specimens being received in the form of powder, I dried the other and likewise pulverized it, and thoroughly mixed

the two portions. Of this uniform powder 300 grains were incorporated with less than half of its weight of prepared sawdust* to facilitate percolation, then arranged in a suitable displacer dry, moderately pressed, and treated with cold water until the droppings passed colorless and almost tasteless. The percolate, which was a very dark, rich colored liquid, possessing a strongly bitter taste, was then concentrated by evaporation, treated with ether to remove the narcotina, and the ether separated by a suitable funnel. The liquid, thus deprived of narcotina, after being mixed with a due proportion of water and heated to expel the combined ether, was then mixed, first, with nearly an equal bulk of alcohol, and then with solution of ammonia combined with alcohol, in the manner directed by the Pharmacopœia in the preparation of morphia. The result was, greatly to my disappointment, a very moderate crop of slightly colored crystals of morphia, very little exceeding one per cent. of the opium employed.

The smallness of this result cannot be due to any incompleteness in the exhaustion of the opium, as this was most thorough, nor am I now prepared to decide the true cause which I propose to leave for future investigation. The ethereal solution above alluded to, on the evaporation of the ether by exposure in a beaker glass, yielded beautiful crystals of narcotina mixed with some impurities, weighing in all nearly 10 grains. In the meantime the residual opium from the aqueous exhaustion was then treated with dilute acetic acid, which produced a light wine-colored solution, to which ammonia was added to precipitate any narcotina thus taken up. The precipitate, after being washed with water, was treated with boiling alcohol. This solution, upon cooling and evaporation, yielded a very small quantity of narcotina. The whole amount obtained, both from the ethereal treatment of the aqueous solution and the acidulous treatment of the marc, not exceeding 3·5 per cent.

From this experiment it will be observed that the larger quantity of narcotina was taken up by the aqueous treatment.

The remainder of my supply of the opium (150 grains) was then digested in ether until everything soluble therein was sup-

*Sawdust from pine, exhausted of all matter soluble in alcohol and boiling water.

posed to be taken up; this ethereal solution, exposed for evaporation, yielded what appeared to be a fair proportion of narcotina in handsome crystals associated with resinous matter.

In a subsequent treatment, to separate the narcotina from this resinous matter, an unfortunate accident occurred to the vessel containing it which occasioned the loss of all. The proportion, therefore, of narcotina contained in this portion was not determined and consequently not so accurate a percentage of its yield by the specimens of opium was arrived at as would be desirable.

After the exhaustion by ether, the opium was digested in water until everything soluble in this menstruum was taken up. The aqueous solution was then mixed, as in the previous case, first with alcohol and then with ammonia, and put aside for the proper length of time that crystals of morphia might form, which, upon being removed, weighed $5\frac{1}{2}$ grains, or very nearly four per cent. If we make allowance for some loss sustained in manipulation, first of the opium itself, and then of the morphia, we may conclude that the yield in this case was four per cent. of morphia. The morphia in both cases was comparatively light colored and the crystals of narcotina were very beautiful and still lighter colored. I did not attempt the purification of either, owing to the smallness of the quantity obtained. As before observed, I would have been glad if my supply of material had enabled me to ascertain comparative morphiometrical and other results, by treatment with cold and hot water, acidulous and alcoholic menstrea.

From these experiments it would appear, then, that the specimen of Virginia opium exhibited to the Association contained four per cent. of morphia and 3.5 per cent. (approximately) of narcotina.

It becomes a matter of interesting inquiry to ascertain how far the results, in the production of this opium, would be modified by a particular mode of culture, and the character of soil and season, as it is altogether probable that its morphia-yielding quality is in a great measure dependent upon a combination of these circumstances.—*Proc. Amer. Pharm. Assoc.*, 1866.

ON THE PART PLAYED BY CHALK IN BUTYRIC AND LACTIC FERMENTATION, AND THE LIVING ORGANISMS IT CONTAINS.

BY M. A. BECHAMP.

During my study of fermentation, it occurred to me to inquire whether the only part played by chalk in the phenomena called butyric or lactic fermentation, is that of maintaining the neutrality of the medium—that is to say, of acting exclusively as carbonate of lime.

White chalk, which belongs to the upper part of the cretaceous stratum, seems to be formed, for the most part, from an extinct microscopic world. According to M. Ehrenberg, these fossil remains are of small organized beings of two families, which he names *Polythalamies* and *Nautilites*. These creatures, formerly organized, are so small and so numerous that a morsel weighing 100 grammes may contain 2,000,000 of them.

But independently of these extinct creatures, white chalk still contains a generation of organisms much more minute than any hitherto known, more minute than any of the infusoria or microphytes of fermentations; and they are not only present, but they are living and adult, though no doubt very old. They act with great energy as ferments (I purposely use this common phrase), and, in the present state of our knowledge, they are the most powerful I know, inasmuch as they are nourished on the most varied organic substances, as I will endeavor to show in a future memoir.

Take from the centre of a block of chalk, either recently taken from the quarry, or after it has been for some time extracted, a portion of the substance, no matter of what size (so that the results may not be supposed to be affected by atmospheric dusts); crush this, mix it with pure distilled water, and put under the microscope with the magnifying power of Nacet's No. 7 eye-piece No. 2 object-glass, and the field will be covered with brilliant points, often very numerous, shaken by a quick trembling movement.

It is generally said that they are animated by a *Brownian* movement. Not believing that this movement belonged to the molecules, and regarding them as living organisms, the smallest I had ever observed, I had recourse to two kinds of proofs to

resolve the problem involved in this hypothesis. The first consists in showing these molecules to be ferments, the second in isolating and analysing them,—that is to say, showing them to contain carbon, hydrogen, and nitrogen in the organic state.

I. *Chalk without the addition of albuminoid matter acts as a ferment.* For all these experiments chalk from the centre of the block is used.

a. *The action of chalk on starch.*—Mix thoroughly 420 grammes of starch paste containing 20 grammes of starch, 30 grammes of chalk from the centre of the block, and 4 drops of creosote. Prepare at the same time a similar mixture in which pure carbonate of lime, recently prepared and exposed for forty-eight hours to the action of the air, is substituted for chalk. The next day the two mixtures will appear to be in the same state. The day after, the mixture containing the chalk will begin to liquefy, and the following day will become perfectly liquid, whilst the other, containing carbonate of lime, will not have changed. The soluble portions of the liquified starch contain soluble fecula and traces of dextrine.

On November 14th, 1864, 100 grammes of starch in the form of paste were placed in 1500 cubic centimetres of water, 100 grammes of Sens chalk, and 10 drops of creosote. The starch was found to liquefy as above, and soon carbonic acid and hydrogen were disengaged. On March 30, 1866, the product of the reaction was analysed, the result being—

Absolute alcohol,	. . . .	4 c. c.
Butyric acid,	. . . .	8.0 gr.
Crystallized acetate of soda,	. . . .	5.2 “

In another experiment, besides these products, a notable quantity of lactate of lime was obtained.

b. *The action of chalk on cane-sugar.*—On April 25, 1865, 80 grammes of very white cane sugar, 1400 grammes of chalk, and 1500 cubic centimetres of creosoted water were placed together. On June 14th the product was analysed, with the following result:

Absolute alcohol,	. . . .	2.6 c. c.
Butyric acid,	. . . .	4.5 gr.
Crystallized acetate of soda,	. . . .	6.8 “
Crystallized lactate of lime,	. . . .	9.0 “

I have verified these results, and found them always the same. I must add that, under the same conditions, pure carbonate of lime has no action, provided all contact with air be avoided; but there are cases in which creosote does not prevent these mixtures fermenting, which would make it appear that there are in the air adult organisms capable of existing in a creosotic medium containing lime.

I will add two observations: the first is, that, to prevent chalk from acting either on cane-sugar or starch, it should be moistened and heated to about 300° ; the second is, that, if sufficient precautions be taken, there will be found, after fermentation, no other ferment than that observed in the chalk, though this will have augmented.

II. *Chalk contains carbon, hydrogen, and nitrogen in the state of organic matter.*—If the preceding experiments be really conclusive, organic matter ought to be found in chalk. To demonstrate this, I have submitted to organic analysis the insoluble part left by chalk when treated by dilute acids.

Dissolve an unpulverized block of chalk in weak hydrochloric acid. Collect the undissolved portions on strong and smooth paper, and wash them in acidulated water until no lime is detected in the filtrate. Then remove the moist residue with a card, without injuring the filter; spread it thinly on a sheet of glass, and let it dry screened from dust.

100 grammes of chalk will thus give 1.15 gr. of insoluble portions dried at 100° . By then drying at about 160° , and incinerating, it will be found that 100 parts of residue dried at 100° are formed of—

	Per ct.
Water (lost at 100° to 160°), . . .	2.47
Organic matter (lost by incineration), . . .	7.17
Mineral matter (residue), . . .	90.36
	<hr/>
	100.00

Submitted to organic analysis, the residue dried at 100° furnished the following results:

Carbon,	1.053
Hydrogen,	0.740
Nitrogen,	0.128

The nitrogen was estimated by Will and Varrentrapp's process. It was ascertained by a trial experiment that the sugar and soda lime employed produced no appreciable quantity of ammonia.

Is white chalk the only form of carbonate of lime which contains actually developed ferments? To resolve this question, I had recourse to M. Michel, who supplied me with a block of limestone of Pountil. This limestone behaved in exactly the same way as white chalk—in short, with chalk only (without any other albuminoid matter than that contained in the starch granules and the trace which may be supposed to exist in cane-sugar), cane-sugar and fecula starch may be fermented, and produce, besides alcohol, the characteristic limits of lactic and butyric fermentations.

The name I propose for the small chalk ferments is "*Microzyma cretæ*." I believe this to be the first example of a class of organisms which I shall have the honor of laying before the Academy. The *microzyma* are to be found in many directions; they accompany various other ferments; they exist in certain mineral waters, in cultivated earth, where they no doubt play an important part, and I believe that a great number of molecules, considered as mineral, and animated by a Brownian movement, are no other than *microzyma*. Such are the deposits of old wines, of which I have treated in a former paper, and the deposits already described by Cagniard-Latour, and which he finally considered as inert matter.—*Chem. News*, Oct. 19, 1866, from *Comptes Rendus*, lxiii. 451.

NOTE ON THE CULTIVATION AND PREPARATION OF CASTOR OIL IN ITALY.

By H. GROVES, Florence.

Two species, or more probably varieties, of *Ricinus*, are found growing spontaneously in the kingdom of Italy—*R. communis* and *R. africanus*—the distinction being chiefly in the stigmata, of which the former has three deeply-forked, and the latter six.

I have not been able to learn at what epoch these plants were introduced, but it would seem probable, from the early use

of castor oil, that they have figured amongst Italian, or at least Sicilian plants, from a remote period, choosing their habitat in the moist thickets that abound near the southern coasts.

The cultivation of castor oil plants for the purpose of commerce, and especially for export trade, has a comparatively recent date, and the introduction of one of the most esteemed varieties dates back but twelve years.

Although the cultivation is carried on in nearly every province in the kingdom of Italy, as well as the Papal States, it is chiefly from the province of Verona that we draw our supplies, both of seed and oil. There are other large manufactories at Leghorn, Genoa, etc., but both there and in the Veronese territory it is frequently found necessary to purchase foreign seed to make up for the scarcity of the native supply, which is regulated in great measure by the value of maize and sagina—plants preferring the same soil as that required by the *Ricinus*.

The two principal varieties cultivated south of Verona are the black-seeded, or Egyptian, and the red-seeded, or American. The latter yields a greater percentage of oil than the former, but the oil is not so pale in color. The Egyptian variety differs also in requiring a rich soil, whereas the American plant prefers a dry soil with plenty of sun.

Speaking generally, the land best adapted for the cultivation of the castor oil plant should not be too argillaceous, but friable, and well exposed to the sun. In November the ground is ploughed up and allowed to remain all the winter exposed to the frosts and north winds, which are frequently severe. By this means the soil is well broken up, and in the spring a series of deep furrows are made about five feet apart for rich soils, or four feet for ground of a less fertile nature. In these furrows are deposited beds of stable manure, which are lightly covered up by means of a plough. In May, or before, according to the precocity of the season, the soil in the furrow is well mixed, and the couch grass and other weeds having been uprooted, planting is commenced. The seed, which is carefully selected, is held in the aprons worn by the women, who take up three or four grains between the thumb and two fingers, and thrust them into the middle of the furrow, dexterously earthing up the hole in the

withdrawal of the fingers. The distance between the plants should be about $3\frac{1}{2}$ feet. After fifteen or twenty days the young plants will have sprung up to a height of about two inches, and the women again visit the fields for the purpose of selecting the strongest plants in each bunch, destroying the others and earthing up the chosen one. After another fifteen days, the plants having attained a height of about eight inches, a plough usually drawn by two oxen is passed between them, to turn more soil into the furrows, and the women following, earth up the plants, leaving only the leaves uncovered. Later, the "*incalzation*," as it is called, is repeated with the spade, and the plants being now sufficiently strong, are left to themselves.

The seeds begin to ripen early in September, when women with baskets on their arms make a daily gathering of the ripe grains, passing by each plant every two, three or more days, according to the intensity of the heat. As soon as gathered, the seeds are spread out on an open floor, to insure their being dry, and, as they retain the outer covering, are called "*Ricino investito*." To obtain the seeds as they are met with in commerce, the following means are adopted:—A layer of about two inches of "*Ricino investito*" is spread over the wooden floor of the barn, and a man without shoes takes an implement made of a flat piece of wood about twenty inches square, underneath which is attached a layer of cork about two inches in thickness, fitted with a handle springing at right angles from the wood, so that it may be used by the man standing. This implement is pushed backwards and forwards, running gently over the seeds, so as to break up the integument, which is subsequently winnowed away. The seed with double covering yields about 66 per cent. of the commercial article.

As soon as the gathering of the seed is over, the plants are cut down and tied in bundles, which are left out to dry, and used in the winter for fuel. The winnowed integument is also used for burning in stoves, or for mixing with stable manure for vine dressing. Finally, when the land is ploughed up in November, the roots are collected, dried, and used for burning. A certain oleaginous principle appears to pervade the whole plant, rendering it useful as a heat-giving and brilliant combustible.

The height of the *Ricinus* varies from five to ten feet, according to the soil, so that the husbandmen have to take into consideration its probable growth, in order to allow a sufficient space for the development of the branches. It is calculated that the Veronese territory alone yields an annual produce of over five million kilogrammes of seed, being less than the quantity required by the manufacturers, who are thus obliged to use a portion of foreign seed.

The preparation of the oil is conducted with great care, so that even the last integument is removed before the seed is subjected to pressure. For this purpose, the grains are passed through a machine consisting of two large revolving wooden rollers, beneath which is placed a powerful winnowing machine for the separation of the seed from the covering, now become broken by the action of the cylinders. As a further guarantee, a number of little girls are employed as sorters, and for this purpose are usually seated, when, placing the seed before them by small quantities, they reject those from which the seed-coat has been imperfectly removed, as well as the damaged and rancid grains, throwing the good ones into baskets placed beneath.

Every manufactory of any importance has at least five or six hydraulic presses, which are placed in a room heated in winter to a temperature of about 70° Fahr. Strong coarse hempen press-bags, about fourteen inches wide, are always kept ready, and in each is placed about three kilogrammes of cleaned seed. The bag, being longer than wide, folds over when in the press, and between it and the superposed one is placed a sheet of iron that has been heated to about 90° Fahr. The presses usually contain from twenty to thirty bags, which have a thickness of rather less than two inches each. All the oil which flows from this pressure is of the first quality. The marc is now ground in a mill, and again placed in the bags; the sheet iron, as usual, is placed between each layer, and the whole gently heated up to about 100 Fahr., when it is again subjected to pressure, the result of which is a further yield of straw-colored oil, much used in the manufacture of printer's ink, etc., etc. The blanched seeds sometimes yield a total of 40 per cent. of oil. The first quality is kept in a warm place, (in summer just beneath the roof,) for some days, and deposits a quantity of mucilaginous and fatty

matter, after which it is filtered. The filtering bags are made of a cloth found in commerce, and have a capacity of seven kilogrammes of oil. When filled, the mouths of these bags being tied up, they are placed on the tin-lined shelves, disposed in such a manner round a room that, by the aid of tubes, the filtered oil flows from all sides into the vessel placed to receive it. Each room usually contains about 2,000 kilogrammes of oil, the temperature being kept at about 55° Fahr. The exhausted marc is used as a manure for hemp and flax, for which purpose it is supposed to be well adapted.

Some little while ago it was proposed to use the marc as a cosmetic in the same way as we employ almond meal, but it did not answer this purpose, as it was found to possess considerable irritant properties. Might not these qualities render it a useful counter-irritant applied as cataplasma? As the marc is readily obtainable in England, it would be as well if some one were to report on its therapeutical value.

Complaints have been made of the difference of quality in Italian castor oils, and of the tendency in some samples to deposit fatty granules in cold weather; but the oil prepared according to the method just described, which is that employed in the Veronese territory, cannot be surpassed in taste or appearance, and gives little or no deposit in the ordinary temperatures of winter. The deposit complained of is due to greater heat having been employed in the processes of pressure and filtration.

From the large doses of the oil used in Italy—sometimes two ounces, simple or mixed with almond oil—it would seem that the comparative tastelessness and brilliancy of the oil are acquired at the expense of its purgative power. I have heard or read that the Chinese use castor oil in their salads. Surely it can possess but feebly the purgative qualities of other castor oils, leading one to suppose that climatic influences and mode of cultivation oppose the development of the purgative principle, which is still further lessened in the oil by a careful preparation. It is probable that to some such causes we must attribute the peculiar blandness of true Italian castor oil.

I am indebted to Signor Valeri for much of the information in the foregoing paper.—*Lond. Pharm. Journ.*, October, 1866.
Florence, August, 1866.

MUDAR, A SUBSTITUTE FOR IPECACUANHA IN THE TREATMENT OF DYSENTERY.

Mr. J. J. Durant states (*Indian Med. Gazette*, May, 1866), that he has found the powder of the bark of the root of mudar (*Calotropis gigantea*) an excellent substitute for ipecacuanha in the treatment of dysentery amongst the native population. In every acute case in which he prescribed mudar it either effected a complete cure in a few days, or at once changed the character of the disease from bloody and mucous to bilious diarrhœa. He administers it in similar doses to what are usually given of ipecacuanna, never beginning with less than one scruple, and seldom going beyond one drachm. He usually gives it alone, but when a weak stomach is suspected in the patient he combines it with carbonate of soda, creasote, bismuth, prussic acid, &c. Like ipecacuanha, mudar, in large doses, is a reliable cholagogue; it is also a sedative to the muscular fibres of the intestines, particularly of the rectum and colon, rapidly allaying all pain, tenesmus, and irritation, and putting a stop to dysenteric action. Its most marked effect is the production of a copious flow of bile, which follows its use in about twenty-four hours.—*Amer. Journ. Med. Sci.*, Oct., 1866.

AMBLYOPIA PRODUCED BY OSMIC ACID.

Dr. Henry D. Noyes records (*New York Medical Journal*, July, 1866,) the following case of this:—

“In June, 1863, Dr. P., assistant in a chemical laboratory, came into my office, stating that he had been suddenly made blind in the left eye in the following manner: He was heating in a crucible a compound of iridium and osmium. He took out a piece of the metal with a pair of forceps for closer inspection, and, though aware of the poisonous properties of the fumes, incautiously held it near the left eye. Immediately struck with a sharp pain, he shut the eye and drew back. In ten minutes he came into my office. The lids were spasmodically closed, light very distressing, and pain in the globe severe. The conjunctiva and sclera were intensely injected, and lachrymation profuse. Pupil of natural size and activity. Sight dim, viz.,

$\frac{1}{2}$, and reads only No. 8, of Jaeger at ten inches. All objects look dim. This dimness is not the effect of lachrymation, because wiping away the tears does not better the vision. Accommodation perfect. There are no muscæ nor phosphenes; the visual field normal. By the ophthalmoscope, both the inverted and upright image, no material change discovered. The media clear, the optic nerve pink, but not unlike the other eye.

"The external inflammatory symptoms continued for one day, and then the eye resumed its normal condition, both in appearance and function.

Dr. P. informed me that a similar accident had once before occurred to him, and that he had seen an account of such an occurrence to a Russian chemist.

The impaired sight was not the effect of the irritation of the conjunctiva, because an equal degree may be excited by the presence of a foreign particle, without any amblyopia. Dr. P. and myself were both convinced that a peculiar poisonous influence was exerted on the retina, produced in a marvellously short time, by the simple contact, for only an instant of the irritating fumes of osmic acid with the surface of the globe.—*Am. Journ. Med. Sci., October, 1866.*

ON BENZOINATED LARD.

BY THOMAS DOLIBER.

QUERY 25th. What is the best process of benzoinating lard and simple ointments? Can benzoinated lard be employed for mercurial ointment, so as to prevent its strong tendency to become rancid, without hurting its medical qualities; and in what other ointments may this form of lard be advantageously used?

In order to ascertain the best process of benzoinating lard, the following experiments were tried:

Two troy-ounces of benzoin were digested with 32 troy-ounces of lard in a water-bath, in accordance with the formula of the Pharmacopœia for preparing ointment of benzoin. The residue of the benzoin, after being dried at a very moderate heat between folds of bibulous paper, was found to weigh one troy-ounce and 306 grains. There had been abstracted from it 174 grains by the lard, provided there were no loss by evaporation or by the sub-

sequent drying. The benzoin, after being digested in the lard, appeared to be unaltered in its sensible properties.

One troy-ounce of benzoin was macerated in four fluid-ounces of alcohol, which dissolved 406 grains. The residue had no odor of benzoin, and on being digested with lard yielded no perceptible odor or color to that substance. It was thus proved that lard will not dissolve any portion or principle from benzoin that alcohol will not also dissolve. It was also proved, by repeated trials, that 16 troy-ounces of lard will not dissolve and retain more than 90 grains of benzoin by the process of the Pharmacopœia for ointment of benzoin.

After several trials the following formula was adopted as the best one for benzoinating lard :

Benzoinated Lard.

Take of Tincture of Benzoin four fluid-drachms.

Lard, 16 troy-ounces.

Rub them together until they are thoroughly mixed; then melt the mixture by a gentle heat and stir the product constantly while cooling.

Tincture of Benzoin.

Take of Benzoin, in coarse powder, six troy-ounces.

Alcohol, one pint.

Macerate the benzoin with the alcohol until it is dissolved; then filter through paper.

The benzoinated lard made by this process is beautifully white and smooth, with the odor of benzoin well marked; while the official ointment of benzoin is almost always dirty white in color, and granular from long digestion in the water-bath, and if heated over a direct fire the benzoin is precipitated upon the inside of the vessel; which precipitate cannot be re-dissolved by heating; while the benzoinated lard prepared by the above formula can be heated to 200° without precipitating the benzoin, and consequently can be used in the preparation of any of the ointments of the Pharmacopœia.

Three portions of mercurial ointment were made. The first was prepared strictly according to the formula of the Pharmacopœia. In the second, ointment of benzoin was substituted for lard. In the third, benzoinated lard was substituted. These

three portions, covered lightly with paper to prevent accession of dust, were exposed to the air at the ordinary temperature. Two were made in January, and one in June last: but as neither portion has yet become rancid, I cannot definitely answer the second clause of the query.

Three portions of ointment of red oxide of mercury were also made: the first with lard, the second with ointment of benzoin, and the third with benzoinated lard. The three portions when made were of the same pink color and perfectly smooth; they were made on the 20th of June, and were exposed in the same manner as the mercurial ointment for nearly two months; at the end of which time they were found in the following condition:

The first, made with lard, had changed in color to dark green, had separated into a granular and a semi-fluid substance, and had become very rancid. The second, made with ointment of benzoin, had not changed color nor become rancid, but had separated in the same manner as the first. The third, made with benzoinated lard, was entirely unchanged in odor or appearance, and looked precisely as if just made.

Experiments with other ointments have not been tried, but there is no doubt that the benzoinated lard can be used in many of the ointments of the Pharmacopœia, without affecting their medicinal qualities.

Boston, August, 1866. —*Proc. Am. Pharm. Ass.* 1866.

ON GRANULAR EFFERVESCENT CITRATE OF MAGNESIA.

By JAMES W. MILL.

QUERY 19. What is the best formula for a granular effervescent Citrate of Magnesia, which shall be permanent, readily soluble in water and suitable for general use?

Soluble citrate of magnesia, in a granular form, is most conveniently obtained according to the writer's experiments by the process of M. de Letter, detailed in the *Am. Jour. Pharm.*, July, 1863, page 312. To succeed well the ingredients should be intimately mixed and exposed in a warm, rather moist situation. The reaction is completed within a few days, and the resulting citrate, by simple trituration in a mortar and sifting, is readily obtained in a granular condition.

66 REMOVAL OF NITRIC ACID FROM SULPHURIC ACID, ETC.

An effervescent citrate may be made according to the following formula :

Take of Citric acid,	ʒvij.
Carb. magnesia,	ʒiij.

Mix intimately and expose in a warm, moist atmosphere till all reaction has ceased. Dry, and by trituration and sifting reduce to a granular powder, then take of this

Acid cit. magnesia,	one troyounce.
Granulated sugar,	half "

(Flavored with oil of lemon.)

Bicarb. soda (dried at a heat under 212°) 100 grs. Mix.

The granulated form of this preparation is handsomer in appearance and probably more permanent, but the powdered is to be preferred, nevertheless, on account chiefly of its readier solubility. The writer has tried the process of M. Morelli, published in the last number of our Journal of Pharmacy, (July No., 1866,) and finds it to yield a salt of readier solubility than any he has yet tried. The following formula is based on this process :

Take of Citric Acid,	ʒvij.
Carb. magnesia,	ʒiij.
Water	fʒiiss.

Pulverize the citric acid, add the water and then incorporate the carb. magnesia. The mass should be stirred frequently during the reaction ; when dried and pulverized, add to each troyounce

Pulv. sugar (flavored with oil of lemon,) ʒss.

Bicarb. soda (dry,) 100 grs. Mix.

Chicago, Ill., 1866. —*Proc. Am. Pharm. Ass.* 1866.

REMOVAL OF NITRIC ACID FROM SULPHURIC ACID BY CHARCOAL.

By WILLIAM SKEE, Analyst to the Geological Survey, New Zealand.

In certain analytical operations, also for voltaic batteries, it is sometimes necessary to use sulphuric acid which is uncontaminated with nitric acid ; but their separation hitherto has been a matter of difficulty, only attained by methods of a very protracted nature.

In the case of dilute sulphuric acid, however, this can be effected by shaking it up with a little freshly-burned charcoal in a state of powder for a few minutes, and afterwards filtering.

Sulphuric acid which has passed through this operation does not give any reaction of nitric acid when left in contact with crystallized sulphate of iron, although before the action may have been very decided.

But if concentrated sulphuric acid, which is only very slightly admixed with nitric acid, be taken and agitated with charcoal as before, it will be found, even after a very long contact, that a crystal of sulphate of iron immersed in it is turned of a pink color just as quickly as if charcoal had not been used.

This refusal of charcoal to absorb nitric acid from its solution in concentrated sulphuric acid would seem to indicate that this acid is retained by the charcoal, in the first instance, in the form of a hydrate, the dilute condition of the sulphuric acid employed preventing its decomposition.—*Lond. Chem. News, November 9, 1866.*

ON THE USE OF SPIDER'S WEB AS A STYPTIC.

BY ABR. ROBERTSON, Wheeling, Va.

On one or two former occasions I have written something on the use of the spider's web as a styptic in cases of excessive hemorrhage after extracting a tooth. I now wish to add the result of my experience in another case. I do it with the hope and belief that it may be an essential service to some of my professional brethren, and perhaps to some of their patients. It may be thus serviceable on two accounts. First, it can always be obtained, and everywhere, and sometimes when other more popular remedies cannot so readily be obtained; and second, because in my hands it has proved efficient where everything else has failed.

About a year ago a young man, about eighteen years of age, came to my office to have a lower molar tooth extracted. I examined the tooth, took my forceps and extracted. The operation required rather less force than usual. The tooth came out entire, and clean, and with no laceration of surrounding parts, except

the necessary severing of the periosteum. But from the first, blood flowed more freely than usual. I directed my patient to rinse his mouth with cold water, which he did considerably longer than the usual time of the flow of blood in such cases, but with no diminution of its flow. I then applied tannin on pledgets of moistened cotton, filling the socket with them. After repeating this application two or three times, the bleeding ceased, and he left. In about three hours after, he returned, bleeding as profusely as ever. I then filled the socket from whence the tooth came with cotton saturated with perchloride of iron. This I repeated several times, with a delay of a few minutes between the applications, without any apparent effect. I next applied the persulphate of iron, full strength, in the same manner, and with no better result. Finally, I procured some spider's web, with which I filled the socket, as I had before done with the cotton, when—I need not say that I was gratified to see—the bleeding stopped almost immediately, and there was no more recurrence of it.—*Dental Cosmos*, November, 1866.

PILULÆ METALORUM ET AMARUM.

BY HUMPHREY PEAKE, M. D., of Visalia, California,

Formerly of Yazoo City, Mississippi.

I propose in this paper to make known to my professional *confreres* the formula for a pill which I have been using for the past ten years, and with such success as never to have been disappointed in the main object—that of improving the quality of the blood. In plain English, I call it a blood maker; in the language of the profession, a hæmatic; of the class Hæmatica, of Dr. Headland. I have named it “*Pilulæ Metalorum et Amarum*”—pills of the bitters and metals—for a reason that any doctor may readily see. Its formula is as follows:—

R. Quiniæ sulphatis, ʒj.
 Ferri Redacti, ʒjss.
 Strychniæ.
 Acidi Arseniosi, aa grs. iij.
 Confectionis Rosarum.
 Vel Mucilaginis Acaciæ.
 q. s. ut ft. pil. LX.

The range of morbid conditions to which this pill is applicable is astonishing to any but the educated of the medical profession. It is applicable to all cases—saving, perhaps, organic disease of important organs, and here, indeed, it could do no harm, although it might be impossible to cure—when the object is to improve the quality of the blood. But it is more particularly applicable, and useful, and *curative*, in the whole list of what I will take the liberty of calling *malarial cachexiæ*. My native country, and that of my early study and practice, is one bathed in malarial poison, and through which flow the Ouachita of Arkansas, and the Red River, dividing the latter State from Texas.

I do not believe that the composition of this pill is to be found in any book. The manner in which I was led to its combination was natural enough, and the only wonder is that the combination had not been made before.

It was and is a very easy matter to stop the paroxysms of a quotidian, tertian or quartan ague, but in a good many cases the paroxysms return at the end of one, two or three weeks, and in some cases, at the end of four weeks—the latter giving rise, doubtless, to the designation *mensæ* in the older writers. They were known among the people as one, two and three weeks' "chills." My father being a physician, I necessarily saw much of the treatment of these maladies, according to the ideas and teachings of the time. When a tyro in medicine and a commencing practitioner, they continually met me, and were among the opprobria medicorum.

I reasoned thus: Sulphate of quinia is an excellent remedy for the ague. Its great value is unquestionable. So is and was that of the Jesuits' bark, from which quinine is made. Iron, also, is good in chronic ague, and enters into many or most prescriptions for its cure. So, too, of arsenious acid. Its reputation is older than that of the bark, or of quinine, and it is still resorted to when the latter fails. Late investigations, too, have shown that *all* the bitters were antagonistic to the malarial poison, and that strychnia more particularly was especially so. The inference was obvious. I would do a sort of "shot-gun" practice in these cases, and combine the whole of these drugs in appropriate proportions. I have never had cause to condemn

the plain logic which led me to the result. The first thing I knew, I had a reputation for curing cases of malarial poisoning, which the other doctors within a radius of fifty miles had failed to cure. Persons came to me with immense infarctions of the spleen, many of whom, in accordance with what is now known of malarial poisoning, had had no ague at all. I prescribed the pills, and they got well. Persons remained pale, debilitated and sallow from attacks of malarial remittent fever. I prescribed the same pill, and they soon had a good color and a stock of good blood. Others came with neuralgia of longer or shorter standing—of the quotidian, tertian or quartan type, evidently of the malarial stamp, which had been broken up, but which had returned. I broke them up with the usual remedies, and then prescribed the pills of the metals and bitters. Their neuralgia came back no more—for that season at least. Then came anomalous cases—pale, exsanguinous persons—some laboring evidently under the influence of malarial poison—others not, in whom no organic disease could be detected, and for whose maladies the Nosology even of John Mason Good hardly had a name, and who were yet sick. (What doctor of long practice has not seen persons die of a disease for which he could find no name?) There was one thing, however, about all these people—they lacked good blood, and having already come to regard the *Pilulæ Metalorum et Amarum*, from experience as well as upon theoretical grounds, as a most powerful remedy for this condition, I prescribed them. These people almost invariably got well and hearty.—*Pacific Med. and Surg. Journ.*, Oct., 1866.

ON VALERIAN.

BY THOMAS DOLIBER.

QUERY 35. Is the cultivated Valerian produced in New England of equal quality with that imported from England and Germany, and are there any characteristic differences by which they may be distinguished?

The Valerian of American and that of English growth were the only varieties with which experiments were made. The American came from Vermont; the English was obtained from an undoubted source. Solid and fluid extracts of each were made, samples of which and also of the roots are herewith sub-

mitted. A quantity of each fluid extract was given to several physicians and others, but the reports from them were very vague and indefinite. A few years ago a large manufacturer of fluid extracts prepared some fluid extract of each variety, American and English, and several hundred bottles of each were sent to physicians with a request to test their relative merits. The reports were generally in favor of that prepared from the American root.

As no analysis of either variety was made, I cannot state the relative amount of oil yielded by them, nor can I tell the average yield from the American root, but the oil distilled from it is of very fine quality, and is said by those who manufacture it to surpass that obtained from the foreign growth, both in quality and quantity. The amount of oil in the latter varies, according to different authorities, from .37 to 2 per cent.

The following table shows the yield of alcoholic extract; two trials were made of each variety, and the formula of the Pharmacopœia was strictly adhered to in each case. The results are stated in grains.

Yield of Alcoholic Extract of Valerian.

Variety,	1st trial.	2d trial.	Average.	Av. Per cent.
American,	1690	1648	1669	28.97
English,	964	1064	1014	17.59

Quantity used, 12 troy-ounces, or 5760 grains.

From the above table it will be seen that the average yield of alcoholic extract from two trials was 64 per cent. more from the American than from the English.

Although convinced of the superiority of the American grown Valerian to that of English growth, I cannot adduce sufficient therapeutic evidence to prove the fact.

In regard to the characteristic differences of the two varieties, I cannot give a very definite answer. In the samples which I have seen, the root in the American variety is longer, finer and lighter in color, with the peculiar odor of Valerian much more strongly marked than in the English; the odor of the latter closely resembles that of Canada snakeroot; this peculiar difference in the odor is equally well marked in the solid and fluid extracts herewith submitted. But that the difference in odor

and appearance, so obvious in the accompanying specimens, is a characteristic one, or only accidental, and depending upon the age of the root, manner of collecting, washing and drying, &c., I cannot state.

The American root is raised in the northern part of Vermont, New Hampshire and New York; it is dug up in the autumn; the adhering dirt is shaken from it and it is carefully washed, generally in running water, and dried quickly in the air and shade and comes into the market very clean and light colored. It is sometimes, however, washed in still water and allowed to remain longer in the water, by which it acquires a somewhat darker color; a sample of each will be seen in the bottle containing the specimen of the American root. In making the solid extract, the first trial was from the dark and the second from the light colored.

The German root is gathered late in the autumn or early in the spring; nearly all that comes to this country is not washed and comes with lumps of dirt enclosed between the fibres. A large proportion of that which is imported as English is actually German root coming through English hands.

Valerian thrives best in a light dry soil, and that which grows in a low wet situation possesses less medicinal properties than the former.

The American variety has almost entirely superseded the foreign in this market, and a large manufacturer of fluid extracts says that he has used them indiscriminately and, of late, the American entirely.

BOSTON, August, 1866. —*Proc. Am. Pharm. Ass.* 1866.

ON THE SPECIFIC GRAVITY OF MEDICINAL CHLOROFORM.

BY JOHN M. MAISCH.

While the U. S. Army Laboratory at Philadelphia was in operation, large quantities of chloroform were prepared. It being our aim to furnish all preparations in every respect up to the requirements of the Pharmacopœia, it was aimed to have the specific gravity of the chloroform between 1.490 and 1.494. A

record kept of 44 carboys, with the specific gravity taken by the one-thousand-grain bottle, shows that 18 came fully up to the Pharmacopœia, ranging between 1.4901 and 1.4933. The other 26 were mostly only an insignificant fraction below the former, while several carboys were as low as 1.4841, 1.4844, 1.4846, 1.4860, &c. These variations are easily accounted for, if it is borne in mind that the preparation was made on a very extensive scale, and that in practice the specific gravity is taken with a hydrometer; then the result will be easily affected by a reduction of the temperature caused by the rapid evaporation of the chloroform, thus making the latter appear heavier than it in reality is.

It was observed that this chloroform decomposed much more rapidly than that of other manufacturers, and it was determined to ascertain the cause of it.

In the first place, pure chloroform, which had been furnished to the medical department of the army, was procured. Of fourteen samples, eleven were below 1.480, the lowest being 1.4760, the highest weighed 1.4806, 1.4815 and 1.4837. On exposing these and some made at the Laboratory to the direct sunlight, the latter was decidedly acid in the course of a day, while the former withstood the action of the light for two or three days, and its decomposition did not proceed quite as fast as in the other case.

A portion of the heavy chloroform was reduced by the addition of a little strong alcohol, when it withstood the decomposing influence of light quite as well as the samples referred to.

Some of these latter were now rectified, in order to obtain them of the standard gravity of the Pharmacopœia. Sulphuric acid was carefully avoided, because it has been asserted by some that it makes chloroform prone to decomposition. By one simple rectification from a water bath, the gravity of chloroform is not much increased. But, if previously washed with water, and rectified over chloride of calcium in a water bath, it may be obtained of the full strength required by the Pharmacopœia. If this chloroform was exposed to the light alongside of that prepared at the place, no difference could be observed in their behaviour, both being decidedly acid after one day's exposure.

It was next thought that probably the impurities contained in

chloroform might cause its rapid decomposition. Some was rectified from a very carefully-regulated water bath, and it was again observed that 98 per cent. may be obtained in this way of such a purity that sulphuric acid will not be affected in the least.

This perfectly clean chloroform generated free chlorine quite as rapidly as before; if diluted with alcohol to below 1.480, it was unaffected by the light.

Mr. Augustus Henkel, now of Cincinnati, and, for a time, one of my valuable assistants at the Laboratory, made a series of experiments on the effects of light, the results of which I subjoin herewith. The chloroform used for the experiments had a specific gravity of 1.492 at 70° F., was absolutely free from acid reaction, and imparted no coloration whatever to sulphuric acid. The diluted chloroform was made of eight ounces of the former, by the addition of one fluidrachm of strong alcohol. The bottles used for the occasion were made of flint glass, of uniform size and shape, and filled alike. The experiments lasted one week during the hot days in August, 1865.

1. *Experiments with pure chloroform.*

Appearance and reaction of chloroform at the end of the week, when kept

	a. In the dark.	b. In daylight.	c. In direct sunlight.
Bots. glass-stop'd.	Extremely slight reaction.	Decidedly acid.	Free chlorine in yellow drops and suffocating odor.
" corked.	" " "	Slightly acid.	
Cans soldered.	Unchanged.	Unaltered.	Unaltered.
" corked.	Hardly recognizable.	"	"

2. *Experiments with diluted chloroform.*

Appearance and reaction at the end of a week when kept

	a. In the dark.	b. In diffused daylight.	c. In direct sunlight.
Bottles glass stoppered.	Unchanged.	Unchanged.	Unchanged.
" corked.	"	"	"
Cans soldered.	"	"	"
" corked.	"	"	"

It was concluded from these experiments:—

1. That in order to preserve pure chloroform of specific gravity 1.49, it should be kept totally excluded from the light.

2. That to keep chloroform in the daylight, it should be reduced in specific gravity by the addition of about two fluidrachms of 95 per cent. alcohol to one avoirdupois pound of chloroform, sp. gr. 1.492.

During the repetition of some of these experiments, attention

was drawn to the presence of moisture in some of the bottles, and it was determined to try its effects on chloroform; accordingly, chloroform of 1.492, dried by standing over chloride of calcium, was kept in absolutely dry bottles and in bottles slightly moist, and both kinds exposed to diffused daylight and direct sunlight. The bottle containing the moisture always showed the presence of free chlorine much sooner than the dry one, though the entire absence of moisture would not be sufficient to preserve the chloroform unaltered. But, if the chloroform had been reduced in specific gravity to 1.475 or less, the presence of several drops of water in the bottle would not induce the liberation of chlorine after an exposure of two weeks to the direct sunlight.

No difference in the preservation and decomposition of chloroform could be observed if the bottles were stoppered with glass or cork.

Commercial chloroform was afterwards procured from several manufacturers, and in all cases it was found to have a specific gravity less than 1.480, or barely exceeding it.

I have not found the time yet to prepare absolutely pure chloroform that is absolutely free from water and alcohol, to study the effect of light upon it when preserved in absolutely dry bottles. But even if light should then have no influence on it, it would, for pharmaceutical and medicinal purposes, be of no avail whatever, since the condensation of moisture upon the bottle in damp weather could not be prevented, and would render the chloroform again prone to change.

The practical results of these experiments are the proof that chloroform, to keep it from getting acid, should be reduced in specific gravity to about 1.475. This is effected by adding to one pound of chloroform of sp. gr. 1.492 two fluidrachms of pure 95 per cent. alcohol; the water which collects upon the surface, on standing, can be easily separated. But since, according to my experience, manufacturers always make it of about that specific gravity, the addition of alcohol to the chloroform, as met with in commerce, is unnecessary.

For medicinal purposes, that is, for inhalation, this amount of alcohol would be unobjectionable, since it amounts in one fluid-ounce only to about forty drops.—*Proc. Am. Pharm. Ass.*

PROCESS FOR THE ESTIMATION OF RESIN IN SOAPS.

By J. SUTHERLAND.

Having often had occasion to analyze samples of soap, the author has found the great want of a process for the correct estimation of the resinous acids contained in admixture with the fatty acids. A process has been given in which spirit of turpentine is recommended for this purpose, but resin being so soluble in that menstruum, it is at once apparent that a correct result cannot be obtained. The following process depends on the fact that resin, when subjected to the action of nitric acid at 212° , is converted into a soluble substance known as terebic acid, ($C_7H_{10}O_4$.) with liberation of nitrous acid; while fatty acids are unacted upon, or at least inappreciably so. Of course, the oleic acid present is converted into elaidic acid; but, as these acids are isomeric, the reaction does not interfere with the accuracy of the result obtained.

Three hundred grains of the soap cut into small pieces are placed in a capsule, and covered with strong hydrochloric acid, the capsule being covered with a piece of glass, and the contents kept gently boiling till the soap is dissolved and thoroughly decomposed. Three or four ounces of hot water are then added, and the capsule is set aside to cool.

When cold, the cake of fatty and resinous acids is carefully removed and re-melted on pure water to remove any acid solution adhering. After cooling, it is dried on bibulous paper, and again very gently re-melted and carefully brought to the boiling point for a minute or two to expel the last traces of moisture.

This cake, containing the fatty and resinous acids, must now be weighed, and the weight carefully noted.

One hundred grains of the mixed acids are placed in a six or eight ounce capsule. It is covered with strong nitric acid, and the temperature gradually raised to the boiling point, when a powerful action takes place with violent evolution of nitrous acid fumes. The heat is withdrawn till the violence of the action subsides, and is then again applied to maintain gentle ebullition for some minutes with frequent stirring.

Small portions of nitric acid are successively added till no

further distinctly appreciable quantity of nitrous acid is given off. The fatty acids are now allowed to cool, and are carefully removed from the strongly-acid and richly-colored solution of terebic acid. The cake is then washed by melting in a further quantity of nitric acid. When cold, it is dried and re-melted at a gentle heat till acid fumes cease to be given off.

The resulting cake is the pure fatty acid freed from resin, the latter being, of course, indicated by the loss. The author has found the above process to give most perfect results by subjecting soaps of known composition to its action.

It will be observed that a correction must be made to obtain the exact relative proportions of fat and resin originally put into the soap-pan, as fats on being decomposed lose about $4\frac{1}{2}$ per cent. of their original weight—i.e., 100 parts tallow-glycerine = $95\frac{1}{2}$ parts fatty acid. Hence, in making our calculation, a proportionate addition must be made to the fatty acid before dividing its weight by that of the resin indicated. This process is also applicable to the estimation of resin as an adulterant of beeswax.*—*Lond. Chem. News*, Oct. 19, 1866.

Soap Works, Sydney Street, Glasgow.

A VISIT TO A SUSSEX HOP GARDEN.

"Not rural sights alone, but rural sounds,
Exhilarate the spirit, and restore
The tone of languid nature."—*Cowper*.

The month of September is generally a favorite part of the year, as the fatiguing heat of the summer sun is beginning to relax into an agreeable warmth more congenial to our feelings. The operation also of harvesting the corn crops has been performed, and the anxiety of many a paterfamilias, respecting a

* In the *Chem. News*, November 2, a writer criticizes this paper, and believes the author has overlooked the action of NO_2 on the fatty acids as a source of error. In the following number, (Nov. 9,) Mr. Sutherland states that he was well aware of the apparent theoretical fallacies of his process, but that in practice he has found nitric acid to attack the resinous acids by preference, in the presence of the fatty acids. Another writer in the same journal claims to have given the process a fair trial, and doubts its reliability.—*Ed. AM. JOUR. PHARM.*

moderately cheap loaf during the ensuing winter, is satisfactorily and happily allayed. The sportsman takes again his dog and gun, and makes sad havoc among the feathered tribes, to amuse his leisure time, to grace his table, and indulge his appetite. But the month of September is a peculiarly interesting and busy season in some of the rural districts of this country. I allude more particularly to the counties of Kent, Sussex, and Surrey, where the cultivation of the hop plant (*Humulus lupulus*) is carried on to a great extent, and forms one of the most lucrative productions of the agriculturist.

As the catkins of the hop plant is officinal, and recognized in our Pharmacopœias, I think a little information on its growth and treatment may not be uninteresting to those who, perhaps living away from any of the hop districts, are quite unacquainted with its cultivation.

We choose a fine day for our excursion, and accordingly set out, having partaken of a hearty luncheon, and provided ourselves with a pair of old kid gloves to protect our hands from the effects of the hops, which, after long picking, leave a dark brown stain on the skin. We need not walk far from the noiseless business of our country town to reach the object of our wishes, and after walking through a shady lane, and crossing a couple of meadows, we arrive at the scene of action.

The hop plantation, or hop garden, as it is usually called, with its regularly disposed high poles, around which the bines entwine themselves, while the hops hang in graceful clusters therefrom, is a striking and beautiful scene. The pickers are, of necessity, varied in every sense of the word, as in the same garden you may find delegates from the Emerald Isle, bairns from Scotland, and a full complement of English hearts of oak. All ages are represented, from that of the hoary veteran and comely old dame, even down to the innocent infant asleep near its mother, in a box rudely made for the occasion.

In each garden there is a certain number of men called pole-pullers, who, by means of an implement with iron teeth, acting as a lever, lift the heavily laden poles from their earthen sockets, and place them in piles so that the bines may be conveniently stripped by the pickers. The hops, as they are picked,

are dropped into a receptacle or bin formed of canvas, secured to a wooden frame, and not much unlike a child's bedstead, except that the canvas is more loosely nailed to the frame. At stated times a person called a measurer comes to each bin, and removes most of the hops, giving the picker leaden tallies to indicate the number of bushels picked, or entering the number in a small memorandum book kept by the picker. At the end of the picking, each picker delivers up his tallies or book, and is paid according to the number of bushels he has picked. The price paid the pickers differs according to the year, or the quality or quantity of the crop. Some of the pickers come a long distance from home,—a great many from London and its environs; and, at the latter end of August, crowds of rough and dirty looking people may be seen thronging the stations on the South Eastern and North Kent Railways, en route to the hop gardens in the country. On their arrival at the station nearest their destination, they are sometimes met by wagons belonging to the tenants or owners of the respective farms on which they are engaged. When they reach the end of their journey they put up tents, and at night the usually quiet and sombre country scenery is illumined by their large fires, over which they suspend their kettles, and around which they sit and smoke the fragrant weed.

After we have picked a little at several of the bins, we wend our way through the hop garden to the "oast house," or place where the hops are conveyed after the measurer has put them in bags for removal. The oast is a curiously shaped building, and any one utterly unacquainted with its requirements would indeed be surprised at its appearance. The shape somewhat resembles two figures 8 put across each other, as it is built in circles called roundels, which meet and are connected in the centre, each having a spiral roof with an opening at the top, over which is placed a revolving screen called a cowl, which, shifting with the wind, prevents an ingress of the same, and facilitates the egress of the fumes from the fires or flues. Some oasts have only one roundel, while others on large farms have more. These roundels vary from eight to eighteen feet in diameter. On entering, we see in the centre of the building several fires burning, not unlike those

used in ordinary kilns. These fires are kept supplied by charcoal and Welsh coal, thereby causing little or no smoke, and roll sulphur is occasionally added, in order to give the hops the pale yellow and healthy tinge so much sought after by the brewers of fine ales, such as Messrs. Bass and Allsop are noted for.

After ascending a ladder, we find some men emptying the bags of hops we had just left in the garden on to a seemingly wooden floor, which we are informed is made of horse-hair, in order to let the heat from the several fires penetrate evenly and sufficiently through the hops on the top of it. This hair floor is supported by a framework of wood, strong enough to allow the dryer to walk on and turn the hops when necessary; but the sulphurous fumes which pass through them and escape at the top, render that performance very disagreeable. The time the hops require to be subjected to this heat or drying varies from eight to eleven hours, according to their age and ripeness, after which they are taken off and transferred to a cooling room for a short time.

In about two or three hours they are ready for packing, and the process is commenced by stretching the top of one of the pockets, as they are called, on a circular framework in the floor. The hops are now gradually thrown in, and a man gets inside and treads them down as tightly as possible. In some oasts a press is used to compress the hops in the pocket, acting like our tincture presses, the screw being propelled and withdrawn by means of a winch.

After the bag is pressed full, it is taken out of its confinement and sewn up, the weight of it printed on it by means of stensil plates, the grower's name and address having been stamped on the bag previous to filling—the name of the county being particularly plain and truthful, as the price varies with the locality—for example, East Kent hops generally are worth more than West Kent, and Sussex hops less valuable than either, that is to say, for proportionate samples. The samples are drawn from the different pockets and forwarded to merchants in London, who offer them for sale.

After having tired ourselves in the packing room, we thank our rustic informants for their courtesy in explaining, and their

readiness to answer our numerous questions, we take our leave, and are very glad to be again in the pure country air after such a subjection to the sulphurous influence of an oast-house.

We are told the picking lasts from three to six weeks, according to the productiveness of the year. The hop-dryers and pole-pullers are well paid, and the pickers often earn a good round sum, and in fine weather, such as we had in September, 1865, really rather enjoy the change than otherwise; but this year the weather during the picking season was very bad, and detracted from their pleasure and added much to their discomfort.

Hop-growing has of late become a popular source of agriculture, and our continental friends are striving in every way to compete with us, and I believe the French intend holding an exhibition of hops and brewing utensils in order to further their knowledge in this respect.

It is a curious thing how times change. Of course we all know a great many English and foreign hops are annually consumed in the process of brewing, and yet (I think I am not in error) in the reign of Henry VIII. a person was arrested on the charge, for that he did wilfully and knowingly use for the purpose of brewing beer a noxious weed, to wit, the hop, which at that early period was a common weed, as we sometimes now see it growing wild in our hedge-rows; but cultivation and attention have brought it to its present beautifully graceful, ornamental, and highly useful state of perfection; and no doubt the majority of our readers enjoy to quaff a draught of that delicious beverage which depends so much upon its prudent admixture. So far as pharmacy is concerned, we have not much to thank the *Humulus lupulus* for, and I know of nothing very remarkable either in the extract or tincture, except that the latter is sometimes very obstinate about becoming clear, even after the infliction of repeated filtrations, and that it is now frequently prescribed in conjunction with carbolic acid as an inhalation in pulmonary affections.

When our curiosity is gratified with regard to the picking, drying, and storing of hops, we start on our homeward walk, and reach the town as the shades of evening draw near, much gratified with our day's amusement. We trust those of our readers

who are ignorant of such scenes as we have described will not be disappointed in reading the history of our visit; while those who live in districts like ourselves can, from similar experience, follow us in every line of our rambles.

A. W. SMITH.

Rye, Sussex, Oct. 25, 1866.

—*London Chemist and Druggist*, Nov. 15, 1866.

ON THE PRESENCE OF PROPIONIC AND BUTYRIC ACIDS
AMONG THE PRODUCTS OF THE DESTRUCTIVE DIS-
TILLATION OF WOOD.

By THOMAS ANDERSON, M. D., F. R. S. E., Professor of Chemistry in
the University of Glasgow.

In the manufacture of sodic acetate from crude pyroligneous acid, a mother liquor is obtained, which, even when highly concentrated, refuses to yield a further crop of crystals. On the addition of sulphuric acid, however, it is found still to contain abundance of acetic acid, having a peculiar rancid smell, which led me to suspect the presence of some of its homologues.

In order to ascertain whether this was the case, a considerable quantity of the mother liquor in question was supersaturated with sulphuric acid, and allowed to stand. The crystals of sodic sulphate which deposited having been separated, the fluid was cautiously distilled on a sand-bath, care being taken to stop the process as soon as the slightest trace of sulphurous acid was observed. The distillate was saturated with sodic carbonate, and on evaporation yielded an abundant crop of crystals of sodic acetate. These having been separated, the mother liquor was again concentrated, and this was repeated as long as crystals were obtained. A thick oily fluid was left, to which concentrated sulphuric acid was added in large excess, and the layer which rose to the surface was separated and distilled.

The greater part of it passed over between 117° and 120° C., and obviously consisted of pure acetic acid; but after it had distilled, the thermometer gradually rose, and small fractions were collected until it reached 200° , at which point only a small quantity of fluid remained in the retort.

The fraction distilling between 138° and 143° was converted

into a silver salt, which was found to contain a quantity of silver intermediate between that of the argentic acetate and propionate. The next higher fraction boiling between 143° and 148° was rectified in a small tube retort, and the latter portion of the distillate having been converted into a sodium salt was fractionally precipitated in three portions with silver nitrate. The last of these was found to contain 59.80 per cent. of silver, and the calculated quantity for argentic propionate is 59.66.

The fraction boiling between 158° and 163° having been treated in a similar manner gave a silver salt which contained 55.10 per cent. of silver, and which was the argentic butyrate, the calculated result for which is 55.30. The acid collected at this temperature had all the characters of butyric acid. It floated on the surface of a small quantity of water, and dissolved in a larger quantity, and its smell was perfectly characteristic.

The acid obtained at a higher temperature had the smell and properties of valerianic acid, but as its quantity was very small, and it was contaminated with a little sulphurous acid, I did not attempt to prepare a silver salt.

I am not aware that these acids have been before observed in crude pyroligneous acid. Their presence in it is not without interest, and is an additional illustration of the frequent occurrence of homologous compounds among the products of destructive distillation.—*Lond. Chem. News*, November 30, 1866.

CRYSTALLIZATION OF RED PHOSPHORUS.

M. Blondlot has succeeded in crystallizing red phosphorus, which has hitherto been considered amorphous, by sublimation in an atmosphere of nitrogen. He introduces about two grammes into a small matrass, and then closes the neck hermetically by fusion, which can be done without igniting the phosphorus, provided the matrass be held vertically. Allowing the apparatus to stand, it fills with white vapors, luminous in the dark, which are due to the oxidation of the phosphorus, and in twenty-four hours all the oxygen of the air is absorbed. The phosphorus may then be melted in a water-bath, while the upper part of the matrass is protected from the heat. The phosphorus is de-

posited in transparent crystals of a cubical form, which, in a few days, form magnificent arborescences, and shine with the lustre and color of the diamond. This state may be preserved by avoiding the light, but by the sunlight, or even by diffused light, they pass to a brilliant garnet-red color, and resemble rubies. A crop of colorless crystals may be got upon the surface of these.—*Journal of the Franklin Institute, December, 1866.*

Varities.

Insects, fabricators of Iron.—It is well known that some insects are skilful spinners, but it was not known that some of them fabricated iron. A Swedish naturalist, M. de Sjogreen, has published a curious memoir on this subject. The insects in question are almost microscopic; they live beneath certain trees, especially in the province of Smaland, and they spin, like silk-worms, a kind of ferruginous cocoons, which constitute the mineral known under the name of "lake ore," and which is composed of from 20 to 60 per cent. of oxide of iron mixed with oxide of manganese, 10 per cent. of chloric, and some centimetres of phosphoric acid. The deposits of this mineral may be 200 metres long, from 5 to 10 metres wide, and from 8 to 30 inches thick.—*Medical News, Nov., 1866, from Rev. de Therap. Méd.-Chirurg., Sept. 15, 1866.*

Poisoning by Cyanide of Potassium through carelessness.—Two cases of this are reported in a recent number (June 21, 1866) of the *Boston Med. and Surg. Journal*, which deserve public attention.

In the first, a porter in a machine shop, being thirsty, dipped a tin cup into a jar of liquid, which he supposed to be water, and swallowed about three drachms before he discovered his mistake. In two minutes he became senseless, and was taken to the hospital, and, strange to say, after an emetic, the use of the stomach-pump and of ammonia, he recovered; for the amount of the poison swallowed was estimated at twenty-three grains, and thirty-five minutes elapsed before any of the remedies took effect.

The other case occurred a few days ago under similar circumstances. A thirsty man, a stranger amongst us, went into a jeweller's shop, and asked for a drink of water. He was directed to the rear, where the sink was situated. Seeing a large covered stone jar standing near it, such as is often used for holding ice-water, he lifted the cover and drank, without stopping to look at it, about half an ounce of the liquid. He became insensible in five minutes. It was found impossible to administer an emetic

of sulphate of zinc in the apothecary's shop, whither he was at once taken, or later to use the stomach pump at the hospital. He died in thirty minutes after drinking what he supposed to be a harmless draught of water. The liquid was a solution of cyanide of potassium in water, of the same strength as that swallowed in the first case—a pound to the gallon. The quantity taken was therefore about half a drachm of one of the most deadly poisons known, of which two or three grains are sufficient to kill a large animal, and five grains have destroyed human life in several instances. The prolongation of life in this, and the wonderful escape from death in the former case, were undoubtedly in great part owing to the fact that the stomach was filled with food, and that on this account the poison was not so rapidly converted into hydrocyanic acid and absorbed.

The editor justly remarks :

"We are far too lax in our police regulations respecting the use and sale of poisons, and if the same energy which is exercised in the enforcement of the liquor and Sunday laws were turned in this direction, much good would result."—*Med. News*, July, 1866.

Liquor of Villate.—M. Houel presented to the Imperial Academy of Medicine (May 2, 1866) a pamphlet on this preparation by Dr. Not a, of Lisieux, which drew from the members some interesting remarks, a summary of which may interest our readers.

The liquor of Villate is an astringent and escharotic preparation which, according to the Veterinary Pharmacopœia, is composed as follows :

Liquid Subacetate of Lead,	30 parts,
Crystallized Sulphate of Copper,	
Crystallized Sulphate of Zinc, aa,	15 "
White Vinegar,	200 "

Dr. N. has employed this preparation with success for many years in the treatment of caries, and of fistulæ following cold abscesses. The memoir of Dr. Notta contains numerous striking cases drawn from his own practice and that of M. Nelaton, showing the efficacy of this preparation. There is much difference of opinion, however, among the members of the Society of Surgery of Paris in regard to this article. MM. Houel, Léon, Labbé, and Desormeaux assert that they have obtained the best results from its use, and have never seen any injury or even serious inconvenience result from it.

On the contrary, MM. Legouest, Chassaignac, Boinet, Le Fort, and Laborie, state that it occasions excessive, insupportable pain, irritation, and very serious inflammation. Finally, MM. Follin and Verneuil have used it sometimes with good, sometimes bad effects; both have found injections of the fluid induce acute pain; the first has never seen any injury result, the second has witnessed severe inflammation, which, however, resulted in a cure.—*Med. News*, July, 1866, from *Revue de Thérapeutique Méd.-Chirurg.*, June 1, 1866.

Manufacture of Iodine.—To the Editor of the *Chemical News*. SIR: I have been a subscriber to the *Chemical News* for many years. In No. 364 I read an inquiry for the names of manufacturers of iodine. Perhaps it may serve the purpose of your correspondent to know that in this city, where more than nine-tenths of all the iodine produced in Great Britain is manufactured, there are only four works—

	Annual Produce.	
One producing about	.	20 kegs of 112 lbs. each
One " "	.	100 " "
One " "	.	150 " "
One (my own manufactory)	.	1000 " "

In all, 1270 " "

Should this information be what your correspondent wants, he is welcome to use it.

Yours, &c.,

WM. PATTERSON.

Glasgow, Nov. 26.

—*Chem. News*, Nov. 30, 1866.

A process has been discovered by which india rubber can be bleached to a pure white, and after having been hardened will be used for collars and cuffs. It is a difficult one, which has long been sought for, and is done by a chemical process, which is said to be fatal to the workmen engaged therein unless protection is afforded them.—*Journal of Applied Chemistry*, Nov., 1866.

India Rubber Varnish.—That India rubber dissolved in various liquids yields a good varnish is well known; but in general they are too viscid for delicate purposes, and are only good for making stuffs water-proof. India rubber liquefied by heat, dissolved in oil or coal tar, or drying linseed oil, does not give a varnish of sufficient fluency or free from smell. Moreover, a considerable quantity of India rubber remains undissolved in a gelatinous state, suspended in the liquid, so that the solution is never clear. Dr. Bolly has recently published some remarks on the subject which may be useful. If India rubber be cut into small pieces and digested in sulphuret of carbon, a jelly will be formed; this must be treated with benzine, and thus a much greater proportion of caoutchouc will be dissolved than would be done by any other method. The liquid must be strained through a woollen cloth, and the sulphuret of carbon be drawn off by evaporation in a water bath; after which the remaining liquid may be diluted at will with benzine, and frequently shaking the bottle which contains it. The jelly thus formed will partly dissolve, yielding a liquid which is thicker than benzine, and may be obtained very clear by filtration and rest. The residue may be separated by straining, and will furnish an excellent water-proof composition. As for the liquid itself, it incorporates easily with all fixed or volatile oils. It dries very fast, and does not shine

unless mixed with resinous varnishes. It is extremely flexible, may be spread in very thin layers, and remains unaltered under the influence of air and light. It may be employed to varnish geographical maps or prints, because it does not reflect light disagreeably as resinous varnishes do, and is not subject to crack or come off in scales. It may be used to fix black chalk or pencil drawings; and unsized paper, when covered with this varnish, may be written on with ink.—*Journ. Applied Chem.*, Nov., 1866.

Bicarbonate of Ammonia.—Schrotter found a mass of crystals in a cast-iron pipe through which raw gas passed, which on analysis proved to have the composition $\text{NH}_4\text{O}, 2\text{CO}_2 + \text{H}_2\text{O}$. Before the analysis was made the crystals were cleaned from coal-tar with which they were soiled, and were resublimed. There is no doubt, then, of the existence of a true carbonate of ammonia.—*Journ. Applied Chem.*, Nov., 1866, from *Sitzungsber. d. Akad. d. Wissenschaft. zu Wien*, Bd. xlv. s. 33.

Cement to fasten Iron in Stone.—A German Professor has found out a cement for fastening iron in stone, which in 48 hours becomes nearly as hard as the stone itself. This consists of six parts of Portland cement, one part nicely powdered lime, burnt but not slacked, two parts of sand, and one part of slacked lime. This, when well mixed and reduced to one mass of cement with the necessary quantity of water, is put in the crevices or openings of the stone and the iron, both being previously damped, and after 48 hours the iron will be found thoroughly and lastingly fastened in the stone.—*Journ. Applied Chem.*, Nov., 1866. *

Editorial Department.

OUR JOURNAL.—With this number commences the thirty-ninth volume, —the fifteenth of the Third Series. The period which has elapsed since January, 1861, has been an eventful series of years in journalism, marked with many changes, the indirect result of the political convulsions which have shaken our country in all its internal relations. Very many journals succumbed to the storm, discontinued their issues, and have not yet revived. The inflation of prices of raw material and labor, due to a paper currency, and the immense taxation necessary to meet the interest on the public debt, have influenced every branch of business, and among them that of publishing books. As the cost of a book is influenced by the number sold, so the cost of a journal varies with the number of its subscribers. As no change in the price of this journal has been made, our readers may easily see that the College has not found it a profitable speculation

to continue it through all the difficulties we have hinted at, nor has the editorial supervision of it been free from embarrassments. During the war, men's minds were too much absorbed in the great issues of that epoch to give thought or time to scientific or professional research, and since, every one's energy seems given to push business to meet the demands created by taxation in its varied forms. Numerous contributors have long been silent, and here at home, among our own members, the same inactivity exists. A valued correspondent in Ohio says of some who are disposed to find fault: "they think the Journal is getting more scientific than practical; what they mostly desire is articles more strictly relating to *pharmacy*, and good *practical working formulæ* for preparing newly introduced remedies. Many acknowledge the value of highly scientific articles, but say they would rather read them in works relating to the subject," &c., &c.

In reply to so much of this criticism as relates to the scientific tendency of this Journal, we will call attention to the advertisement always printed on the cover in reference to its objects: "*This Journal is devoted to the advancement of pharmaceutical knowledge, including practical pharmacy, materia medica, chemistry in its general and applied relations, and to the collateral sciences, botany, mineralogy, zoology, &c.*" In reference to the articles on practical pharmacy and recipes queried after, not a few have been published, but, let us ask, what is the source of such articles? Are they not eliminated by the brains and hands of pharmacutists who work out the processes for themselves, and who are liberal enough to communicate the knowledge thus gained for the benefit of those who are not able to do it for themselves, or who won't make the exertion? Now, here's the rub. The apothecaries who work out these problems *are, in general, not thus liberally disposed*; on the contrary they make specialities of their recipes on all occasions where there is a prospect of pecuniary return. There are some bright exceptions, however; and to these mainly must the progress of our art be attributed; and here lies the difference between the contributors to journals devoted to abstract, and to applied science. The former are generally men anxious for distinction, or those already distinguished in research, or earnest seekers of knowledge for its own sake; they are not looking to see how much money is in every discovery. The latter are contributed to by practical men of all grades. One writes to direct attention to a *patented* process; another describes a substance, the *origin* of which is involved in doubt; a third gives a recipe, with the manipulation omitted, as an advertisement; whilst a fourth—a *rara avis*—tells the whole story, and gives the true working formula or process. Now it is to the labors of this latter class that our correspondent alludes, and we earnestly second his wishes so far as to appeal to that respectably large class of pharmacutists, dotted here and there over our wide country, who really, at heart, have a warm feeling for the progress of our art, but who fancy it don't need their aid and efforts. To these gentlemen we say,

glance over your laboratory note books, and see if there are no suggestions that will interest your brethren without injuring your business, no matter how meagre or unscientific they may appear. Further, if you know of any official formula that is defective, send a note of your view of the deficiency and in what respect you think it can be improved, and, if possible, how. Others, seeing this, will be stimulated to give their experience, and thus the truth will be advocated, and good seed sown. There must be some to work for the general good in every cause. Let us join hands, then, in contributing more practical articles to our Journal, at the same time that it retains its standing as a record of pharmaceutical science. Let us reach down to the aid of those who can only appreciate pharmaceutical literature in the shape of money-saving formulas and processes, and give them a sustaining draught,—mayhap, in time, they may gain strength and interest enough to digest articles of a higher grade, become pharmacutists in reality, as well as in name, and return the gift with interest in the form of papers to this or some other Journal.

PERCENTAGES ON PRESCRIPTIONS.—It has long been the received impression that pharmacy, though a derivative or offshoot from medicine, is now an independent profession, business or calling; that when the pharmacist carefully and correctly composes and dispenses the physician's prescription he has done his whole duty to the physician and his patient, and in return receives from the latter the regular and proper price for the medicine, which should fully compensate him for the cost of the drugs and the investment of time and skill employed in their preparation and dispensing. In the matter of patronage, the pharmacist is its recipient sometimes from the physician, sometimes from the patient, frequently from both. The writer of a prescription is clearly entitled to the assurance that it will be correctly dispensed, as it is the best means that he can devise to cure the disease. The patient also has a direct interest in the character of the dispenser who serves him, and where a preference exists a reasonable physician will not object, unless he has had occasion to doubt the ability or integrity of the dispenser, or unless, for legitimate special reasons, a particular apothecary can serve him best. We have known physicians to refuse to attend a case unless the prescription was sent to a specially named dispenser. We have also known the heads of families who would not employ a physician who refused to have his prescriptions dispensed by the family apothecary. In point of fact, however, the physician generally controls the case, and it is of the utmost consequence to his reputation, therefore, that his motives should be beyond reproach.

These reflections have been suggested by the following printed circular, which was received by a physician:

"Confidential.

"DR. ———. *Dear Sir:*—Having recently located myself at ———

Street as practical druggist and pharmacist, I would most respectfully solicit your patronage. With an experience of ten years at the head of the prescription department, I trust by the strictest CARE AND DILIGENCE to merit your favor.

"Feeling a desire to make my establishment a permanency, and owing to the great competition I may have to contend with, I beg leave to offer you a commission of ten per cent. on your prescriptions, payable monthly. Sincerely hoping that this proposition may not meet with your disfavor,

"I am, very respectfully,

"Your obedient servant,

"*Philada., Nov., 1866.*"

This is not the first time we have seen a missive of this character, though it but rarely happens that the apothecary has so mistaken the general temper of physicians as to approach them in this palpable form. In another instance 25 per cent. was offered as the inducement to the physician to part with his self-respect. On the contrary, the proposition sometimes comes from the other direction, and it is the apothecary who is applied to by the physician. In either case it is a direct temptation to the sin of covetousness,—urging the physician to prescribe more frequently and expensively than he otherwise might think necessary, and urging the apothecary to overcharge the patient, that he may retain his usual profits.

However this may be, it is all wrong, and an insult either way to honorable members of either profession, and should be discountenanced by them both. Let the writer of the above missive take the beaten path to success in pharmacy by meriting success on the score of excellence in dispensing, both as regards the quality of his drugs, the perfection of his preparations, and the neatness of his dispensing; and with a reasonable amount of patience and enterprise, he will much sooner succeed than by perilling his reputation by such offers.

DUPLICATING NUMBERS.—It has become necessary to advertise our subscribers that the mail service is at their risk, and that it is impossible for us to make up all the losses that are occasioned by irregularities of the Post Office. The last volume for 1866 is nearly out of print, as a complete volume, from this cause,—remailing numbers not received—and we wish it distinctly understood that after carefully addressing and mailing this Journal to a party, our responsibility ends, and if there is loss it must be borne by the subscriber. This will lead to more care in giving addresses, and cause subscribers to look to the Post Office for redress. Where we are really in fault we expect to be responsible.

Manual of Materia Medica and Therapeutics. Being an abridgement of the late Dr. Pereira's Elements of Materia Medica, arranged in conformity with the British Pharmacopæia, and adapted to the use of medical practi-

tioners, chemists and druggists, medical and pharmaceutical students, &c. By Frederick John Farre, M.D., Cantab., F.L.S., &c., &c., &c., assisted by Robert Bentley, Professor of Materia Medica to the Pharmaceutical Society, &c., and by Robert Warrington, F.R.S., of Apothecaries' Hall, &c. Edited, with numerous references to the U. S. Pharmacopœia, and many other additions, by Horatio C. Wood, Jr., M.D., Professor of Botany in the University of Pennsylvania, &c. With 236 wood engravings. Philada., Henry C. Lea, 1866: pp. 1030.

If it was necessary to have another work on materia medica in England, it would have been well for Dr. Farre and his co-laborers to have built one up from the foundation, as they are abundantly able to do, and let the great work of Pereira remain unabridged, retaining undimmed, amid all future revisions, the impress of his genius and research.

The author of the abridgement, Dr. Farre, has reduced the work to about one-third its size, not only by condensing the leading articles, but by extensive omissions from the first volume of the original, and by omitting all pharmacological remedies not contained in the official list of the British Pharmacopœia. Now it is well known that the list of the British Pharmacopœia was very much reduced in the late revision, thus affording to Dr. Farre, so far as his British readers were concerned, a legitimate ground for extensive curtailment. But however this may suit the medical practitioners of England, we very much doubt the wisdom of excluding so many articles that were more or less used or referred to in some portions of that kingdom, and especially by druggists and pharmacutists who have to cater for medical men of all grades of opinion in materia medica. It is better to have the mere name of an article, with reference to where it may be found noticed, than to pass it by untouched.

The American publishers having determined to reprint the book, and seeing these deficiencies, very wisely placed the work in the hands of an editor,—Dr. Horatio C. Wood, Jr.,—to restore these omissions, and, by the introduction of the processes of the United States Pharmacopœia, to adapt it, as far as possible, to the wants of physicians and pharmacutists here. How well this onerous task has been performed, and how much the book has been increased in value to American readers by Dr. Wood's labors, let us examine. Besides the numerous interpolations of formula from the U. S. Pharmacopœia, "over one hundred articles on substances in the U. S. Ph. have been introduced," many of which are of prime importance. In hastily glancing over the volume we have noticed among these, glacial phosphoric acid, iodide of sulphur, ammoniæ valerianas, potassii cyanidum, sulphite of soda, liquor magnesiæ citratæ, aluminæ sulphas, acid. chromic, kermes mineral, cadmii sulphas, plumbi iodidum, ferri subcarbonas, pil. ferri carbonatis, liq. ferri subsulphatis, liq. ferri tersulphatis, ferri lactas, ferri ferrocyanidum, etc., among mineral substances; and oatmeal, sago, sabadilla, veratrum viride, aloë capensis, allium, vanilla, cypripedium, arum, symplocarpus, maranta, tapioca, stillingia, American ipecac, asarum

canadense, wormseed phytolacca, sassafras bark and pith, hedeoma, salvia, monarda, leptandra, gelsemium, sulphate of atropia, gutta percha, chimaphila, gaultheria, eupatorium lastucarium, coffee, madder, spigelia, ginseng, wild cherry bark, quince seed, rubus villosus, gillenla, calabar bean, simaruba, rhus toxicodendron, cotton root, ol. theobromæ, sanguinaria, cornus florida, helleborus niger, coptis, cimicifuga, hydrastis, and many others. The interpolation of so much matter (nearly one-fourth of the volume) has made the editorial office no sinecure, and the general accuracy and faithfulness of the service deserves commendation. We say *general*, because there are some points in which the editor has not brought the work quite up to the present level; for instance, in the chemistry of veratrum viride, ergot, and black pepper. The researches of C. Bullock and W. T. Wenzell are not noted in the two first, and in the notice of piperin its alkalinity is questioned. The editor has also introduced a large number of the illustrations of the large edition of Pereira, together with several new cuts, among which that on veratrum viride is excellent. The publisher has done his part well, both as regards paper, press-work and binding, making a handsome volume of over a thousand pages.

Practical Therapeutics, considered chiefly with reference to articles of the Materia Medica. By Edward John Waring, F.R.C.S., F.L.S., Surgeon in Her Majesty's Indian Army. From the second London edition. Philada., Lindsay & Blakiston, 1866: pp. 815 octavo.

This work by Dr. Waring, to the most casual reader, presents the subject in a form that attracts attention from the simplicity of its arrangement, and the perspicuity of its style. Unlike the larger works of Wood, Stillé and others in general use, the arrangement is based on the items of materia medica in alphabetical order. The range of drugs noticed is very extensive, but, whilst the author has adopted a materia medica framework, he has carefully avoided making his book a treatise on drugs, by giving only the most salient points of their history and characters. Thus, of camphor the author says: "CAMPHORA, Camphor. A concrete volatile oil obtained by sublimation from the wood of *Camphora officinarum* (*Laurus camphora*, Linn.), a native of China and Japan. *Nat. Ord.*, Lauracæ; *Linn. Syst.*, Enneandria monogynia. It is also found in white crystalline fragments in the wood of *Dryobalanops camphora*. It is found in small quantities in other plants; that used in the Tennesseim Provinces is obtained in considerable quantities and of fair quality from the leaves and stalks of the *Blumea grandis* (*De Cand.*). *Comp.* C₂₀H₁₆O₂. *Equiv. wt.* 152."

This brief notice is followed by six pages, the first of which refers to the medical properties, mode of action, officinal preparations and modes of administration of camphor, whilst the other five are occupied with its therapeutic uses. In giving these, the paragraphs are headed in italics with the more prominent diseases in which the drug is used, making refer-

ence easy and convenient. In order to meet the difficulty which is presented by this arrangement to those who are accustomed to a nosological arrangement, an INDEX OF DISEASES has been introduced, in which reference is made to the name and page of all substances used in each disease.

It will be found that the author has judiciously gone more into details in the important articles, such as quinia, chloroform, opium, rhubarb, ol. terebinthina, etc. He has given copious references to the authors from whom he quotes, but in many instances it is to be regretted the articles indicate an imperfect acquaintance with American medical authorities,—a fact not surprising, as his first edition was written in the East Indies. For this reason, the valuable properties of many useful American drugs are wholly unnoticed, among which may be mentioned wild cherry bark, ulmus, cornus florida, gillenia, geranium, gossypii radix, monarda, stillingia, hydrastis, cypripedium, gelsemium, symplocarpus, etc. It will be also observed that *Æther* is noticed with half a page of comment, whilst chloroform occupies twelve pages! thus showing how the stand-point and circumstances that surround a writer influence his writings. Dr. Waring, aiming, as he evidently does, to embrace a wide range of non-official remedies, would do well to consult more American authors before he issues another edition.

The second part of the book refers to medicinal agencies and therapeutic classes, as alteratives, anæsthetics, hot and cold baths, blood-letting, electricity, inhalation, etc.

The book is beautifully gotten up by the publishers, and is certainly one of the most valuable additions to a medical library that has been published of late years.

Synopsis of the various courses of practical instruction pursued in the School of Analytical and Applied Chemistry in the University of Michigan. By Silas H. Douglass, M.A., M.D., Prof. of Chemistry. Ann Arbor, 1866.

This department of the extensive educational operations of the University of Michigan is under the direction of Prof. Silas H. Douglass and his assistants, and embraces courses on *qualitative analysis, determinative mineralogy, quantitative analysis, metallurgy and assaying, toxicology, urinalysis and practical pharmacy.*

“The first of these courses is required of all students entering the laboratory; and to be admitted to it the student must pass a satisfactory examination in elementary chemistry.” Hence the object of this course is to familiarize the student practically with the subject he has been merely studying in books, and requires him to examine qualitatively one hundred compounds. The other courses can be chosen from as to which will be pursued afterwards. In the quantitative course fifty separate operations are carried out, including the analysis of salts, minerals, alloys, ashes, soils and mineral waters. Alkalimetry, acidimetry, chlorimetry,

alcoholometry and organic analysis are included. The courses on toxicology and urinalysis are specially directed to medical students and physicians, and are very thorough. The course on practical pharmacy, which appears to be a new feature, embraces five parts: 1, weighing and measuring, including specific gravity; 2, the determination of alkalies and acids; 3, distillation; 4, preparations, including chemicals inorganic and organic, solutions, tinctures, wines, extracts, syrups, pills, troches, etc., etc., following the U. S. Pharmacopœia,—giving especial attention to the methods of percolation, evaporation in vacuo, etc.; 5, extemporaneous pharmacy, including the compounding of prescriptions, spreading plasters, emulsionizing, etc., finishes the course. As this course is necessarily based on the preliminary one on qualitative analysis, the pharmaceutical student, being familiar with chemical changes, is prepared to detect incompatibles and adulterations.

The University authorities have erected a building specially for the accommodation of this School, with complete modern appliances for heating, ventilation and for investigations. The term begins October 1st, and continues nine months.

So far as can be judged by the programme, and from the knowledge we have of Prof. Douglass as a teacher, we believe this School calculated to be very useful to those who attend it. The liberal basis on which the University of Michigan is conducted gives all the tuitional advantages of the University courses, including those of this School, for thirty dollars; but the student must pay for the chemical apparatus actually consumed in analysis, etc., at the ordinary retail prices. It is such a School as this that the Alumni of the Philadelphia College of Pharmacy propose to endow in that Institution, and to be conducted parallel with the thorough theoretical courses which have long been given under its auspices.

Catalogue of the Class of the Philadelphia College of Pharmacy, FOR THE FORTY-SIXTH SESSION, 1866-67.

With a List of their Preceptors and Localities.

MATRICULANTS.	TOWN OR COUNTY.	STATE.	PRECEPTOR.
Abernethy, Robert H.	Philadelphia.	Pennsylvania,	H. H. Abernethy.
Allaire, Charles B.	Aurora,	Illinois,	Edward Parrish.
Archibald, Henry C.	Philadelphia,	Pennsylvania,	H. C. Archibald.
Austin, J. H.	Chambersburg,	"	Charles Shivers.
Ayres, F. L.	La Salle,	Illinois,	F. G. Crane.
Bartram, Ernest,	Philadelphia,	Pennsylvania,	S. T. Jones.
Bates, Louis A.	Wetumpka,	Alabama,	George W. Harris.
Buck, Jacob B.	York,	Pennsylvania,	H. B. Lippincott.
Beck, John W.	Lancaster,	Ohio,	G. G. Beck.
Milzard, Joseph E.	Philadelphia,	Pennsylvania,	John Stradley, M.D.
Bollinger, A. D.	Schefferstown,	"	
Borhek, James T., Jr.	Bethlehem,	"	M. M. Selfridge.
Boring, Edwin McC.	Lancaster,	"	R. B. Garrigue.
Bourke, Joseph M.	Philadelphia,	"	

Boyd, Abraham,	Licking County,	Ohio,	C. R. Keeney, ³
Boyle, James O.,	Philadelphia,	Pennsylvania,	Mecray & Dickson.
Boyle, John,	"	"	C. Ellis, Son & Co.
Boynnton, Amasa,	Chicago,	Illinois,	H. C. Eddy.
Bradley, Thomas F.	Chicago,	"	Hazzard & Smith.
Bronson, Eugene C.	Philadelphia,	Pennsylvania,	Bennet L. Smedley.
Brown, Samuel A.	Rockdale,	"	J. R. Anguey, M.D.
Brown, Thomas J.	Carlisle,	"	James T. Shinn.
Bucher, H. F.	Bristol,	"	
Buckman, James,	Philadelphia,	"	D. L. Stackhouse.
Burrows, George,	"	"	Hance, Griffith & Co.
Carberry, P. J. L.	Llewellyn,	"	John Gegan, M.D.
Chance, Henry C.	Galesburg,	Delaware,	Samuel Gerhard.
Chandler, D. Woelpper,	Chicago,	Illinois,	Elliot, White & Co.
Clark, A. B., Jr.	Philadelphia,	Pennsylvania,	J. T. McKnight.
Corbidge, J. E.	Chambersburg,	"	S. Mason McCollin.
Craven, James,	Philadelphia,	"	Bullock & Crenshaw.
Croft, Samuel F.	Athensville,	"	Frederick Brown.
Cumming, C. L.		"	C. L. Cumming.
Cuthbert, Richard W.		"	O. S. Hubbell.
Davis, Aaron R.		New Jersey,	Amos Hansell.
Davis, Henry,	Crosswicks,	"	
Dilks, Samuel L.	Philadelphia,	Pennsylvania,	S. L. Dilks.
Drescher, Augustus,	New York,	New York,	
Eayre, Mortimer H.	Philadelphia,	New Jersey,	D. Milligan.
Elliott, Frederick G.	Wilmington,	Pennsylvania,	Wetherill & Bro.
England, Howard,	Bethlehem,	Delaware,	L. M. England.
Erwin, Bertine S.	Philadelphia,	Pennsylvania,	C. Ellis, Son & Co.
Esterle, August A.	"	"	Royal & Royer.
Estlack, Horace W.	Oxford,	Ohio,	A. H. Yarnall.
Farr, William L.	Quakertown,	"	McGaw & Ridey.
Ferguson, William M.,	Johnstown,	Pennsylvania,	W. H. Gillard.
Foulke, James,	"	"	A. Tatem.
Fraser, R. S.	Germany,	"	C. T. Frazer.
Frommelter, James J.	Philadelphia,	Pennsylvania,	E. Herwig.
Früh, Carl,	Frankfort,	"	C. H. Needles.
Germon, William D.	Philadelphia,	"	Wetherill & Bro.
Gray, Anson,	"	"	Crawford & Fobes.
Gilliams, John,	Frankfort,	"	L. R. Gilliams.
Hdg, Charles R.	Philadelphia,	"	H. A. Bower.
Hambright, Edwin A.	Mount Holly,	New Jersey,	Wm. Procter, Jr.
Hancker, William H.	Philadelphia,	Pennsylvania,	D. D. Richardson, M.D.
Harding, Henry,	"	"	C. H. Fish.
Harnet, James M.	Reading,	"	A. B. Taylor.
Harris, Edwin M.	Philadelphia,	"	George W. Harris.
Harrop, Joseph,	Gallipolis,	Ohio,	
Harry, Albert,	"	Maryland,	Haesard & Co.
Harry, Jacob,	Burlington,	New Jersey,	Haesard & Co.
Hays, Nathan W. C.	Lebanon,	Pennsylvania,	Daniel S. Jones.
Hecker, Jacob K.	Philadelphia,	"	Wm. B. Webb.
Henszey, W. C.	"	"	Carpenter, Henszey & Co.
Herbert, Eugene,	"	"	French, Richards & Co.
Himmelwright, Francis E.,	Chicago,	Illinois,	George C. Bower.
Hoagland, P. R.	Baltimore,	Maryland,	Wm. Macpherson.
Hoffman, John V.	Philadelphia,	Pennsylvania,	Wm. McIntyre.
Horn, David,	"	"	John Horn.
Isard, George W.	Medford,	New Jersey,	W. Gibson, M.D.
Jones, Edward B.	Lebanon,	Pennsylvania,	Thomas J. Husband.
Jorden, Henry A.	Haddonfield,	New Jersey,	Wm. H. Hickman.
Karch, Joseph,	Philadelphia,	Pennsylvania,	C. W. Hancock.
Kay, Samuel D.	"	"	Bullock & Crenshaw.
Killé, Caldwell,	Allentown,	"	J. J. Kirkbride.
Kirkbride, Joseph J.	Philadelphia,	"	Gustavus Radefeld.
Klump, Charles O.	"	"	Wm. H. Webb, M.D.
Koch, Christian,	"	"	Wm. Ellis & Co.
Koldewey, Robert,	"	"	Bullock & Crenshaw.
Kolp, C. Henry,	Nashville,	Tennessee,	Powers & Weightman.
Lessey, Oliver H.	Philadelphia,	Pennsylvania,	Bullock & Crenshaw.
Lillard, Benjamin,	"	"	Isaac H. Kay.
Little, A. H.	Dublin,	Ireland,	
Locuson, Joseph S.	Philadelphia,	Pennsylvania,	D. Jameson, Jr.
Loran, Thomas,			
Loughlin, Dennis J.			

McInell, Edward, Jr.	Wilmington,	Delaware,	Edward McInell.
McMillin, John,		Pennsylvania,	H. O. Blair's Sons.
McMinn, Joseph H.	Williamsport,	"	J. T. Shinn.
Marshall, Alfred S.		New Jersey,	Ralph Newton.
Marshall, R. T.,	Philadelphia.	Pennsylvania,	W. F. Simes.
Mathews, C. C.	Shippensburg,	"	O. B. Elbe.
Mattern, William K.,	Philadelphia,	"	S. Rosenberger, M.D.
Merkel, Louis J.,	Watertown,	Wisconsin,	Ambrase Smith.
Merklein, Charles H.	Chambersburg,	Pennsylvania,	N. C. Reid, M.D.
Missinger, Levin A.	Easton,	"	C. H. Needles.
Moore, Charles C.	Philadelphia,	"	Bullock & Crenshaw.
Moorhead, William W.	"	"	O. E. Davis.
Moseley, A.	"	"	Wyeth & Bro.
Noergaard, William,	New York,	New York,	J. M. Malsch.
O'Brien, T. Bryan,	Philadelphia,	Pennsylvania,	
	"	"	B. Parrish.
Parrish, Clemmons,	Churchtown,	"	H. F. Bucher.
Plunk, Winfield S.	Philadelphia,	"	C. Ellis, Son & Co.
Price, Ferris,		"	
Rewalt, John W.	Middletown,	"	Wm. Taylor.
Raser, W. H.	Reading,	"	J. W. Dallam & Co.
Rex, Frederick A.		New Jersey,	Carpenter, Henssey & Co.
Rice, William C. Jr.	Philadelphia,	Pennsylvania,	Zeigler & Smith.
Roche, William F.	"	"	E. M. Roche.
Rosengarten, F. H.	"	"	Rosengarten & Sons.
Schaffe, S. W. W.	"	"	Elliot, White & Co.
Schell, Harry D.	"	"	Jenks & Middleton.
Schellinger, C. M.	Cape Island,	New Jersey,	A. M. Mecray.
Seybert, Robert L.	Philadelphia,	Pennsylvania,	Thomas Gorden, M.D.
Shaw, Joseph B.	Cape Island,	New Jersey,	Wm. R. Claridge, M.D.
Shivers, Charles, Jr.	Philadelphia,	Pennsylvania,	Bullock & Crenshaw.
Shoffner, John N.	Norristown,	"	Wm. Stahler.
Shropshire, Joseph B.		New Jersey,	A. C. Merritt.
Shryock, Allen K.,	Philadelphia,	Pennsylvania,	Jn. Reakirt & Co.
Shugard, B. F.	Montgomery Co.,	Pennsylvania,	James G. Wells.
Simes, Samuel,	Philadelphia,	"	John W. Simes.
Simes, Samuel F.	"	"	Samuel S. Bunting.
Simpson, G. T.	"	"	Wm. E. Knight.
Simon, Mathias,	La Crosse,	Wisconsin,	Wm. T. Wenzell.
Smith, Homer A.	Chicago,	Illinois,	R. C. Brodie.
Stackhouse, George P.	Philadelphia,	Pennsylvania,	F. Zerman, M.D.
Stokes, J. Spencer, M.D.	"	"	
Storke, L. Scott,	Media,	"	G. C. Evans.
Swaim, George M.	Newark,	New Jersey,	
	Philadelphia,	Pennsylvania,	James L. Bispham.
Tait, Stewart,	Philadelphia,	Pennsylvania,	Charles L. Eberle.
Taylor, James,		"	
Treichler, L. A.		"	
Vandegrift, Isaac P.	Haddonfield,	New Jersey,	Thomas Estlack.
Walling, W. H.	Philadelphia,	Pennsylvania,	W. H. Walling.
Walton, Samuel D.	"	"	J. M. Maria.
Warrington, Edward C.	"	"	Bullock & Crenshaw.
Webb, Samuel W.	"	"	Elliot, White & Co.
Webb, William H.	"	"	U. S. Laboratory.
Weichselbaum, Jacob,	"	"	Smith & Shoemaker.
Weidemann, Charles A.	"	"	Theophilus Fischer, M.D.
Westermann, Joseph F.	"	"	Wm. C. Todd, M.D.
Wetherill, S. P.	"	"	Wetherill & Bro.
Weymer, H. B.	"	"	C. Ellis, Son & Co.
Wike, Albert D.	"	"	H. C. Blair & Sons.
Williamson, Forrest F.	Sadsburyville,	"	A. H. Yarnall.
Wilson, Charles,	Delaware Co.,	"	Curran & Wilson.
Wilson, Edwin K.,	York,	"	T. R. Coombe.
Wilson, William,	Haddonfield,	New Jersey,	James H. Smith.
Wirman, Charles,	Parkeesburg,	Pennsylvania,	Edwin Thomas.
Witmer, Horace F.	Philadelphia,	"	Carpenter, Henssey & Co.
Wood, John Y.	"	"	James W. Harry.
Woodling, Albert E.	Dixon,	Illinois,	E. Parrish.
Woodward, Charles E.	Marshallton,	Pennsylvania,	C. Ellis, Son & Co.

JOURNALS, &c., RECEIVED SINCE THE LAST ISSUE.

- The Pharmaceutical Journal and Transactions, London.
The Chemist and Druggist, London.
Chemical News, London.
Vierteljahresschrift für praktische Pharmacie, Munich. By Dr. G. C Wittstein.
Journal de Pharmacie, Paris.
Journal de Chimie Médicale, Paris.
Repertoire de Pharmacie, Paris.
Revista Farmaceutica, Buenos Ayres.
La Emulacion, Habana, Cuba.
The Druggist's Circular and Chemical Gazette, New York.
American Journal of the Medical Sciences, Philadelphia.
Journal of the Franklin Institute, Philadelphia.
Proceedings of the Academy of Natural Sciences of Philadelphia.
Boston Medical and Surgical Journal.
The American Journal of Science and Arts, New Haven, Conn.
The Medical and Surgical Reporter, Philadelphia.
The American Journal of Insanity, Utica, N. Y.
Medical News and Library, Philadelphia.
The Cincinnati Lancet and Observer, edited by Drs. Mendenhall, Murphy and Stevens.
The Ohio Medical and Surgical Journal.
The Chicago Medical Journal, edited by Samuel Brainard, M. D., and J. Adams Allen, M. D.
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The Journal of Materia Medica. Edited by Dr. Joseph Bates and H. A. Tilden, New Lebanon, N. Y.
New York Medical Journal, Oct., 1866.
United States Medical Journal, Chicago.
The Savannah Journal of Medicine. By MM. Harriss, Read and Thomas.
The Medical Reporter: a semi-monthly Record of Medicine and Surgery. St. Louis.
The Medical Record. New York. Vol. I. No. 16. Semi-monthly.
The Journal of Applied Chemistry, New York. Professor Dussauce, Editor. 1866.
Atlanta Medical and Surgical Journal, Oct., 1866. J. G. and W. T. Westmoreland, Editors. Atlanta, Ga.
The Detroit Review of Medicine and Pharmacy.
The Nashville Journal of Medicine and Surgery.
The Dental Times: a Quarterly Journal of Dental Science.
The New Orleans Medical Record. Vol. I. Nos. 1, 2, and 8.

AMERICAN JOURNAL OF PHARMACY.

THIRD SERIES.

This Journal is devoted to the advancement of Pharmaceutical knowledge, including practical Pharmacy, Materia Medica, and Chemistry, in its general and applied relations, and to the collateral sciences, Botany, Mineralogy, Zoology, &c. Intended for the benefit of the Apothecary, the Druggist, and the Physician, it merits their patronage and support.

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Mar, 25

VOL. XXXIX.]

AMERICAN

[NO. I

JOURNAL OF PHARMACY

PUBLISHED BY AUTHORITY OF

THE PHILADELPHIA COLLEGE OF PHARMACY.

EDITED BY

WILLIAM PROCTER, JR.

THIRD SERIES.]

MARCH, 1867.

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NOTICE BY THE PUBLISHING COMMITTEE.

The American Journal of Pharmacy has now completed its 38th volume. On an examination of the stock of the Journal, the Committee find that eight of the volumes are wholly or partially out of print—viz., vols 1, 2, 3 and 5 of the first series, and vol. 1 of the 2d series, and the 4th, 5th and 13th vols. of the 3d series. All the remaining volumes, 29 in number, they can supply on demand. Believing that the work embodies a large amount of information, extremely valuable to Apothecaries, Druggists and Physicians—comprehending, in fact, a faithful record of the development of Pharmaceutical science and inventions during the period of its issue, now about thirty-eight years, both in Europe and America, the Committee consider that no Pharmaceutical library should be without it.

Besides the abstract and applied science embodied in this work, a large number of formulæ are contained in it, including many, which though not official, are more or less valuable and in use.

As an inducement to Subscribers to complete their sets as far as possible, the Committee offer the back volumes to the 24th inclusive, at the reduced price of \$1.50 each, nett.

The volumes 25 to 38 inclusive, except the 28th and 29th volumes, are held at the publishing price, 3.00, unless a full set is taken, in which case they will be supplied at \$2.50 per volume.

The Committee offer the publication price in money for the 4th number of the 1st volume, published January, 1830; for the complete 2d volume, commencing April, 1830; for the complete 3d volume (1831); for the complete 5th volume, 1833, and for the complete 7th volume, commencing April, 1835. They will also be glad to receive and pay for the January and July numbers of 1857, for the July number, 1856, for the 37th volume, (1865,) and for the January number, 1865.

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THE
AMERICAN JOURNAL OF PHARMACY.

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MARCH, 1867.  
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ON COLCHICIA.

BY JOHN M. MAISCH.

Some years ago the active principle of colchicum was repeatedly made the subject of investigation with results frequently differing in the most essential particulars. Very few of these papers have found their way into American Journals, and it may therefore not be without interest to review the chemical examinations of this interesting substance which have been published within the last ten or twelve years.

Since Geiger and Hesse prepared what they stated to be an alkaloid, now more than thirty years ago (1833,) this compound had excited very little interest until this was awakened again in consequence of four fatal cases of poisoning in Berlin, by wine of colchicum seed, the forensic analyses by Schacht and Wittstock being widely circulated, and a condensed account was published in this Journal, 1855, page 539. Dr. J. Müller, apothecary of Berlin, accused in the above case of unlawful sale of poison, was found "not guilty," because Tinct. Colchici Sem. was not enumerated in the Prussian Pharmacopœia, (6 edition,) among the poisons; he published a long paper in Buchner's Neues Repertorium, 1855, page 246—268, wherein he attempts to confute the results of Schacht and Wittstock, and wherein he states, "that not only the alkaloids and active principles strychnia, hyoscyamia, daturia, emetia, atropia, solania, veratria, sabadillia, aconitia, delphinia, picrotoxin, brucia, cusparin, theina, scillitin,

but also the active principles of *Convallaria polygonatum*, *Paris quadrifolia*, *Triglochin palustre*, *Alisma plantago*, *Arum maculatum*, &c., even the common onion, give more or less quite the same reactions which the experts observed during their investigation."

Reithner (Wittstein's *Vierteljahresschrift*, iv. 481) examined the flowers of *colchicum autumnale* and found *colchicia* combined with tannin.

Professor K. Schroff, of Vienna, experimented with various parts of *colchicum* and with *colchicia* prepared by Merk, of Darmstadt, by Geiger's process; the seeds had yielded him from four to six drachms of alkaloid per hundred weight; it was a light yellow crystalline powder, possessing otherwise the properties and reactions given by Geiger, among the latter particularly the reaction by concentrated sulphuric (yellowish-brown color,) and nitric acid (violet, indigo-blue, green and yellow color,) (*Oesterr. Zeitschr. f. prakt. Heilkunde*, 1856; see also *Amer. Journ. of Pharmacy*, 1857, 324.)

In *Comptes rendus*, Dec., 1856, (see *Am. Journ. Ph.*, 1857, 235,) L. Oberlin denied the existence of an alkaloid in *colchicum autumnale*, and announces the discovery of *colchiceine* $C_{33}H_{22}NO_{11}$, a neutral-poisonous principle, not precipitated by tincture of galls or bichloride of platinum, nearly insoluble in water, soluble in dilute acids with yellow color, and turning yellow, violet, deep red, light red and yellow with concentrated nitric acid.

Previous to the publication of this paper, four essays had been handed in to the officers of the North German Apothecaries' Association, in answer to a prize query on *colchicia*, propounded for the year 1855-56. The first prize was awarded to Albrecht Aschoff, the second to Gust. Bley. The results of these investigations were reported on in *Archiv der Pharmacie*, 1857, Jan. 1-27. A condensed account of Aschoff's process for preparing the alkaloid from the corms is found in *Parrish's Pharmacy*, 2d edit. p. 414, 3d edit. 659. The cold infusion is precipitated by subacetate of lead, from the filtrate the lead is separated by carbonate of soda, the filtrate is precipitated by tannin, the precipitate washed, pressed, dissolved in alcohol, decomposed by freshly

precipitated oxide of iron, the filtrate evaporated, dissolved in a mixture of absolute alcohol and ether, evaporated, dissolved in water and evaporated. One lb. of dry corms gathered in October yielded 6·5 grains, gathered in November 4 grains, gathered in May 7·5 grains, young corms 6·5 grains.

By the same method, 2 lb. of fresh flowers with the subterranean portion attached, equal to 4½ oz. dry, yielded 7 grains, the same weight of flowers cut off above the ground, only two grains of colchicia.

The seeds were boiled with water, expressed, the decoction neutralized by lime, boiled, filtered and evaporated, the extract exhausted with alcohol, distilled, the residue extracted with water, the solution precipitated by tannin and the precipitate treated as above. Ten lb. of ripe seeds yielded 160 grains of colchicia, unripe seeds the same quantity.

G. Bley obtained much less colchicia; he exhausted by alcohol acidulated with sulphuric acid, neutralized with lime, evaporated, dissolved in water and treated the precipitate by carbonate of potassa with alcohol and animal charcoal; most of the colchicia must have remained in the mother liquor.

Hübschmann (Schweiz. Zeitschr. für Pharm., 1857, No. 2) obtained from 100 lb. of seed half an ounce of colchicia, light yellow and amorphous, which would not neutralize the acid reaction of two drops dilute sulphuric acid.

The inaugural essay of John E. Carter "on colchicia" is printed in this Journal, 1858, p. 205-211. He prepared the alkaloid from the corms by a process similar to Aschoff's for the seeds, but used hydrated oxide of lead for decomposing the tannate, and obtained 20 grains of colchicia from 3 pounds or 6·66 grains per pound, thus agreeing with Aschoff's results.

G. E. Walz (N. Jahrbuch f. Prakt. Pharm., xvi. 1,) states that he obtained colchicia in white rhombic crystals; by boiling the aqueous solution with dilute acids colchicine was obtained and the filtrate reduced an alkaline solution of copper.

In the following year (1862) H. Ludwig and Pfeiffer prepared impure yellowish-brown colchicia from the seed, by boiling them with alcohol, distilling, diluting with water, separating from the oil, precipitating by tannin, drying with oxide of lead, exhaust-

ing with hot alcohol, distilling, filtering and evaporating. This impure body was dissolved in water and precipitated by tannin in two fractions; the colchicia from the second fraction was less freely soluble in water. By slowly evaporating with sulphuric acid, crystallizable colchicein was obtained and the mother liquor did *not* reduce an alkaline solution of copper. Colchiceine is sparingly soluble in cold, more in hot water; the aqueous solution is colored yellow by dilute acids, violet and brown by concentrated nitric acid, precipitated by tannin, chloride of platinum, chloride of gold, nitro-picric acid, solution of iodine, and chlorine water, not by corrosive sublimate; the reactions are therefore almost identical with those of the amorphous colchicia; the alkaline nature of this body is denied; it was *almost* without action upon slightly reddened litmus paper.

M. Hübler (Jenaische Zeitsch. f. Med. u. Naturw., 1864, 247) prepared colchicia by a process similar to Ludwig's, except that the aqueous solution of the alcoholic extract was precipitated by subacetate of lead and the lead removed by phosphate of soda; colchicia was precipitated by tannin in fractions, the middle portion was decomposed by oxide of lead, and the fractional precipitation by tannin and decomposition by oxide of lead repeated until the product was of a sulphur-yellow color and soluble in alcohol and water without turbidity. It is amorphous, of a faint aromatic odor and intensely bitter taste, fusible at 140°C . (284°F .) insoluble in ether, readily soluble in water and alcohol, without action on litmus paper and produces in aqueous solution a yellow color with mineral acids and alkalis, and precipitates with chloride of gold (yellow), corrosive sublimate (white) and tannin (curdy;) not with chloride of platinum, perchloride of iron, subacetate of lead and sulphate of copper; its composition is $\text{C}_{34}\text{H}_{19}\text{NO}_{10}$. Heated with dilute sulphuric acid a resinous body and colchiceine is obtained which is removed from its aqueous solution by animal charcoal and converted into a brown uncrystallizable body, which is also formed from the solution in contact with air. It has the same composition as colchicia, has an acid reaction, decomposes the carbonates, is soluble in alkalis, and these solutions are precipitated by salts of the alkaline earths and metallic oxides; it appears also to be formed by the action of

alkalies upon colchicia and does *not* pre-exist in the seeds of colchicum. Pure colchicia in doses of .05 grm. killed dogs, but did not affect rabbits in doses of .1 grm.

The collection of chemicals in the Philadelphia College of Pharmacy contains a specimen of colchicia^a prepared by Mr. Carter in 1857; a portion of this was used for the purpose of clearing up the contradictions in the statements of the above authors. The substance is a light yellow amorphous powder, possessing a very faint odor and intensely bitter taste, sparingly soluble in ether, but easily soluble in water and alcohol, the aqueous solution being slightly turbid, most likely in consequence of the decomposition of a small portion into resin and colchicein. Heated upon platinum foil, it fuses; at a higher heat, it takes fire and burns without leaving any residue. Placed upon moistened red litmus paper, the blue color is restored; very faintly reddened litmus becomes blue also by a concentrated aqueous solution. One drop of dilute sulphuric acid dropped from a bottle giving fifty-two drops to the fluidrachm, consequently about one-eighth of a grain HO,SO_3 , when mixed with one grain of colchicia, retained its acid reaction. One drop of the acid was mixed with one fluidounce of distilled water; in five minims of this mixture, equal to about one-seven hundred and seventieth grain HO,SO_3 , one-sixteenth grain colchicia was dissolved and the solution now had a distinct alkaline reaction on slightly reddened litmus paper; but on heating this solution to the boiling point, it had acquired an acid reaction. It will be seen that two important statements of Mr. Carter are corroborated, namely, the alkaline reaction of colchicia and its power to destroy the acid reaction of sulphuric acid.

The behaviour of colchicia towards reagents, I found to be as described by the authors quoted above; the most important tests for recognizing the presence of colchicia, are its behaviour to dilute acids and also alkalies, by which its solution acquires a yellow color, and the violet and blue color which is produced by oxidizing agents with dry colchicia. This latter coloration, which changes through various shades finally into yellow, is strikingly beautiful when concentrated sulphuric acid is used and immediately some nitric acid or a fragment of a nitrate is added; strong

nitric acid produces it likewise, but it changes more rapidly to yellow. Sulphuric acid with a trace of chromate or bichromate of potassa, or of sesquichloride of iron, or of binoxide of lead, shows the same reaction at the point of contact with colchicia; the liquid itself has a green color with the first two reagents, owing to their intense yellow color.

One grain of colchicia was dissolved in one fluidounce of distilled water, slightly acidulated with muriatic acid; by repeated trials it required 114 drops from this vial to make one fluidrachm; this measure had been carefully gauged with a pipette graduated into $\frac{1}{100}$ CCM. In making the following experiments, a sufficient amount of the reagent was added to enough distilled water to make one fluidounce, and the solution of colchicia was carefully dropped in until, after stirring, a permanent turbidity was observable. Under these circumstances, it was required of

Mayer's iodohydrargyrate of potassium 15 drops—turbidity quite distinct.

Sonnenschein's phosphomolybdic acid 20 “ turbidity distinct.

Tannic acid 100 “ turbidity scarcely observable.

It follows from this that the following amounts of colchicia may be detected by

Mayer's test	.01645 grains or one part in 27700 water.*			
Sonnenschein's test	.02193	“	“	20778 “
Tannic acid	.10965	“	“	4156 “

Solutions of colchicia in water acidulated with sulphuric and with muriatic acid were evaporated and three times taken up by water and again evaporated; the aqueous solutions were finally filtered from the separated resin, and the filtrate slowly evaporated with an excess of carbonate of lead, the residue then treated with strong alcohol and slowly evaporated. Colchicein was obtained in yellowish crystals, which were free from acid and lead. Dissolved in water it still yields precipitates with tannin, phosphomolybdic acid and iodohydrargyrate of potassium; but neither in solution nor in substance does it produce any reaction on red or blue litmus paper. Rendered faintly alkaline by ammonia, the solution occasions precipitates with the soluble salts of barium, calcium and lead, which are soluble in dilute nitric acid. Towards acids it behaves similar to colchicia.

* One fluidounce water = 455.669 grains.

The resinous matter remaining on the filter when colchicein is filtered off was dissolved in alcohol, and the solution evaporated; an amorphous brown-greenish mass was left, in which alcoholic solution has a decided acid reaction. Concentrated nitric acid dissolves it with an evanescent yellow color; on the addition of sulphuric acid the solution takes place with a purplish-brown, rapidly disappearing; pure sulphuric acid dissolves it with a brown color.

Having looked in vain in every portion of the decomposed colchicia for glucose, or a compound which would reduce an alkaline solution of copper, the observations of Oberlin, Ludwig and Hübler are confirmed.

Taking all these results together, no doubt colchicia must be looked upon as an alkaloid, the salts of which are soluble in water, but decomposed with the formation of colchicein, on keeping them in solution as well as on evaporating them. The crystalline mass, obtained by Mr. Carter on evaporating sulphate of colchicia, was undoubtedly colchicein.

Aschoff and Bley observed already that colchicia combines with bases, and that when it is evaporated with a solution of the carbonate of an alkali, the residue contains no carbonic acid. Hübler makes it probable that colchicein is formed under these circumstances. Colchicia is a very weak base, and colchicein, if it can be regarded as an acid, is certainly a weak one, and resembles the alkaloids in its behavior to some reagents. If colchicia and colchicein have the same composition, the acid-resin formed together with the latter can scarcely be different.

In preparing colchicia, the action of alkalies and acids, particularly when heat is applied, must be avoided.

Regarding the official preparations of colchicum, requiring the application of heat, the two fluid extracts must contain colchicia in its natural state of combination; extractum colchici acetici, however, contains colchicein. It would be interesting to ascertain how long colchicia is found in the official wines before it is partly or entirely converted into colchicein; the similarity of their reactions will increase the difficulties of their separation without farther decomposition of the alkaloid, while it facilitates the discovery of colchicum in cases of poisoning.

Aschoff proved its presence in the stomach, heart, lungs, kidneys and blood of a cat which had been killed by $1\frac{1}{2}$ grains colchicia.

SOLUTION OF MECONATE OF MORPHIA.

BY WILLIAM PROCTER, JR.

A preparation has long been known and used in England under the name of "Solution of bi-meconate of morphia," with the impression that it possessed decided merit in a therapeutic point of view, from being the *natural* salt of morphia as it exists in the poppy. Until recently this has been considered to be meconate alone, but in 1862 Messrs. T. & H. Smith, of Edinburgh, discovered a peculiar acid as a constant ingredient of opium, which they submitted to Dr. Stenhouse for analysis, who pronounced it identical in composition with *lactic acid*; yet its relations to bases prove it to be isomeric only, and they gave it the name of *thebolactic acid*. These chemists have ascertained it to be as constantly present, and as regular in quantity, as any other of the well-marked normal constituents of opium,—they having examined twenty different lots of opium, and prepared as much as one hundred pounds of thebolactate of lime. They also found it to be present in the proportion of about two per cent., and they believe it to exist naturally in union with the morphia and perhaps other alkalies. It follows, from this information, that meconate of morphia only partially represents the natural condition of that alkaloid, and to be perfect it should be meconate and thebolactate combined.

The original preparation, as imported, is evidently not a solution of the pure salt, as there is both color and odor, though not much of the latter. So far as I remember no process for it has appeared in print; the one employed by Powers & Weightman, and Parrish, was suggested by Edward S. Wayne, of Cincinnati, and is said to consist in precipitating the meconic acid as a lead salt, separating the lead by hydrosulphuric acid, precipitating the morphia from the filtrate and washings of the lead precipitate, re-uniting the impure meconic acid and morphia thus obtained, and diluting the solution to the strength of laudanum, using a portion of alcohol.

If it be desirable to represent the thebolactic acid in this solution, it will be necessary to prepare the acid by a separate process, as this acid is not precipitated by acetate of lead or ammonia. The proportion of meconic acid in opium, according to the best authorities, is about 5 per cent.; that of thebolactic acid 2 per cent. (*See Amer. Jour. Pharm. for 1865, p. 466.*)

In glancing over the meconates, with a view to the selection of one that would render the use of sulphuretted hydrogen unnecessary, I concluded to try the baryta salt, as recommended by Couerbe, for the preparation of meconic acid. This consists in making a solution from the opium in powder, with alcohol 90°, precipitating this with powdered chloride of barium in excess, observing accurately the quantity used, separating the precipitate, washing it with strong alcohol, mixing it with hot water, and adding a quantity of sulphuric acid, properly diluted, equivalent to the baryta present, filtering the liquid while hot to avoid loss of meconic acid by cooling. The alcoholic morphia liquid was then distilled to recover the alcohol, treated with water, filtered, half its bulk of the recovered alcohol added, precipitated by ammonia, allowed to stand until the impure morphia had separated, and this collected and washed, added to the meconic acid, dissolved by a gentle heat, and filtered.

This process cannot be recommended, however, for the shop, as it involves too much nicety of manipulation in adding and separating the baryta, occupies too much time, and retains the opium odor more firmly, unless the alcoholic extract be dried and re-dissolved by water before precipitating the morphia.

The following working process is therefore suggested as more eligible for the apothecary, and as being less complicated:

Take of Opium in powder (or dry enough to powder), 5 troyounces,
Stronger Alcohol (95 per cent.), a pint,
Distilled Water,
Water,
Acetate of Lead,
Water of ammonia, of each a sufficient quantity,
Ingredients for generating sulphuretted hydrogen, a
sufficient quantity.

Macerate the opium in a pint of water with agitation for three days, strain with expression, and again macerate in successive portions of water, a pint each time, for twenty-four hours, until four pints have been used and the opium sufficiently exhausted. Evaporate the liquors carefully to the measure of a pint, filter, and add solution of acetate of lead until it ceases to produce a precipitate. Collect this on a filter, wash it with water thoroughly, suspend it in a pint of warm distilled water, pass a current of sulphuretted hydrogen through the mixture until the lead is entirely precipitated, heat and filter the solution of meconic acid that remains, until deprived of sulphuretted odor. Meanwhile take the liquid filtered from the lead precipitate (containing the morphia, etc.), together with the washings, evaporate them at a gentle heat to four fluidounces; drop in sufficient diluted sulphuric acid to precipitate the oxide of lead present, and filter; then mix the filtrate with an equal bulk of alcohol and carefully add the solution of ammonia, with agitation, until it remains in slight excess; allowing it to rest twenty-four hours, that the morphia may separate. Collect the impure morphia on a filter, wash it with a little water, and dissolve it in the hot solution of meconic acid and filter if necessary, washing the filter with a little distilled water. Finally, add first sufficient distilled water to the filtrate to make it measure three pints, and then the stronger alcohol, and mix them.

Thus made, solution of meconate of morphia has a decided bitter taste, but little odor except from the alcohol present, and a light reddish-brown color, varying in different specimens, and due to adhering coloring matter, and especially to contact with oxide of iron during preparation in filters or utensils.

I have given the details explicitly, to enable the apothecary to make the preparation when not in reach of the manufacturer, as the process is too tedious and troublesome to be resorted to for the supply of a small demand, except from necessity.

The writer believes it to possess no merit not embraced in the official "deodorized tincture of opium" and the "liquor opii compositus" of Dr. Squibb, and offers the process for use when needed, rather than to create a demand by recommending so costly a substitute for sulphate of morphia.

PHARMACEUTICAL NOTES.

BY ALBERT E. EBERT.

Bi-Bromide of Mercury.—Having lately had some demand for bi-bromide of mercury, and not being able to obtain the salt in market, it became necessary to prepare it. After many trials with different formulas which were at command I devised the following process, which recommends itself for simplicity and cheapness, and which enables the dispensing pharmacist to make it expeditiously, should occasion require it.

Take of Bromide of Potassium 240 grains.

Solution of Nitrate of Mercury (U. S. P.) 510 grains,
or ʒss.

Distilled Water a sufficient quantity.

Dissolve the bromide of potassium in two fluidounces of water, and add, with stirring, the solution of nitrate of mercury. Set it by for a few minutes, so that the precipitate may subside. Pour off the supernatant liquid, and wash the precipitate with water until the presence of nitrate of potassa in the washings is no longer indicated by appropriate tests. (This is best determined by boiling a portion of the washings, previously treated with a few drops of *pure* sulphuric acid, and rendered slightly blue with sulphate of indigo. If the color remains, no nitric acid is present.) Transfer the still moist precipitate to a glass flask, add twelve fluidounces of distilled water, and heat to the boiling point, or until the precipitate is dissolved. Now pour the solution, while still hot, on a paper filter, and set the filtrate aside to crystallize. Lastly, drain the crystals, and dry them on bibulous paper. It is sparingly soluble in cold water, requiring 240 to 250 parts for solution (Storer's Dict.); while at the boiling point it is dissolved by 25 parts of water. It is quite soluble in glycerin and oil of turpentine, and very soluble in alcohol and ether. The dose is similar to that of corrosive chloride of mercury, from $\frac{1}{18}$ to $\frac{1}{4}$ of a grain.

Wheat Phosphates.—A dietetic preparation under this name was brought to the notice of the medical profession by Dr. Tilburn Fox (*Med. Times and Gaz.*, March, 1866). In the paper alluded to the author says: "The various forms of infants' food

are, in the great majority of instances, simply and purely starch. Now, inasmuch as the starchy element is not the assimilative nor the flesh-forming, but the heat and fat producing principle, all our past efforts in securing a nice white flour have been antagonistic to the possession of nutritive material, and actually the very desirable part of the grain, contained in the *bran*, viz., the organized phosphates and other principles have been deliberately rejected." He claims that "the organized phosphates aid the assimilative function, and promote digestion." To obtain these *organized phosphates* he recommends "that a decoction be made of *bran*, evaporated, mixed with sugar, and reduced to powder." The ideas advanced by Dr. Fox have met with much favor from physicians whose frequent inquiries induced me to supply the wheat phosphates. Those who have made trial of the compound give satisfactory report of its usefulness, and regard it as a valuable dietetic. A very considerable experience in the manufacture of this article enables me to offer a few practical suggestions in relation to its preparation.

Wheat Phosphates.

Take of Wheat Bran (free from dust) ʒxvj.

Water Ovj.

Sugar a sufficient quantity.

Boil down to four pints (being careful not to burn it), and strain while hot with pressure. Transfer to a water bath, and evaporate as quickly as possible, with stirring, until it has acquired the consistence of an extract. If the evaporation is slow, and the liquid is exposed a considerable time to the action of the atmosphere, it is liable to undergo a change, and acquire a sour taste. When this extractive consistence has been reached, however, it does not require further care. Allow it to dessicate slowly, by the heat of a water bath, to a pulverizable mass. Reduce this to a very fine powder, and mix it with pulverized sugar in the proportion of 1 part of wheat phosphates to 3 parts of sugar. The mixture should be passed through a very fine sieve. The average yield of wheat phosphates from sixteen troy ounces of bran is four troy ounces, which mixed with 3 parts of sugar represents the original quantity of bran used. It is especially

recommended for young children in whom the assimilative function is at fault. It may be used in place of sugar, a teaspoonful being added two or three times a day to the child's food.

Chicago, Illinois.

NOTE ON TESTING GLYCERIN FOR SUGAR AND GLUCOSE.

BY THE EDITOR.

The *Druggist's Circular* for January (page 9) has a communication from a correspondent, A. C. Pope, relative to the purity of commercial glycerin, which attracted our attention by the assertion of his inability to find any pure glycerin, notwithstanding some of the best kinds were instanced as having been tried. The loose and imperfect manner in which the alleged testing was applied lead to strong doubts of the correctness of the results, and especially those by Trommer's test for glucose, but the statement was so straightforward and unhesitating that it was calculated to challenge belief, and shake the faith of some in the best product of our markets. Until Bower's bottled glycerin was introduced, we had clung to Price's as the only perfect product obtainable, but since the former was fairly tried we have believed it to be equal in all respects to Price's. When, therefore, we read the statement of Mr. Pope we at once subjected the glycerin of the manufacture of Mr. Bower to Trommer's test for glucose and to tests for lime and chlorine, and found it wholly free from these impurities and from odor when warmed. We then tried the Vienna glycerin, made by F. A. Sarg, and found it entirely free from sugar and lime, but it was clouded by nitrate of silver, due most probably to some chloride present, and when heated it had a faint odor, not observed when cold. Two other American glycerins, Eckstein & Co. and Hennell Stevens, were tried for sugar only with equally negative results. The action of Trommer's test for glucose is so unequivocal and well marked in the presence of glycerin that no doubt need be felt by the experimenter; the reduction of the oxide of copper on boiling being manifest by its brick dust color, when even in small quantity. But as glucose would not be used as an adulterant in less than 5 or 10 per cent., with profit equal to the risk of dis-

covery, there need be no better test used, pure glycerin not reducing the cupric oxide.

Mr. Pope appears to have been deceived by the deep blue color which the mixture acquires after the contact of the alkali. This coloration is a quality of glycerin due to its solvent power on the cupric oxide. According to A. Vogel (Gmelin, vol. ix. 490), cupric sulphate mixed with glycerin forms a clear azure blue mixture, with an excess of potassa." "Where the potassa is in smaller quantity a precipitate occurs, but this is soluble by heat and a further addition of potassa; the resulting blue solution decomposes below 212° , depositing a flaky precipitate."

In speaking of Vienna glycerin Mr. Pope says, "however, upon boiling I failed to get the precipitate of suboxide of copper," an admission at once clearing the sample tested from the suspicion of glucose.

As cane sugar syrup may be used as an adulterant, its presence may most satisfactorily be detected by diluting a little of the suspected glycerin with three parts of water, adding a few grains of tartaric acid, and boiling a few moments. Then add the solution of sulphate of copper, followed by the potassa, when the reddish suboxide will at once appear if cane sugar had been present, the tartaric acid having changed the cane sugar into glucose.

The editor of the *Circular*, in commenting on Mr. Pope's remarks, among other things observes, "Another method of detecting sugar in glycerin is by means of *chloroform*, in which glycerin dissolves readily whilst sugar is quite insoluble. The liquid [glycerin] is first heated to drive off the water it contains, then mixed with chloroform. The whole is then poured on a tared filter and repeatedly washed with chloroform, after which the filter and its contents are dried at 212° F., and weighed.

By reference to the U. S. Dispensatory, 12th Edit. p. 420, the same idea is suggested, credited to the *Chemical News* (1863, vol. viii. p. 227). This method is defective from the fact that *commercial glycerin is insoluble in chloroform*, and consequently sugar may be present without being detected by this means. We have tried samples of four different manufacturers, and all are equally insoluble in chloroform. Singularly enough the most recent works on chemistry and pharmacy do not allude to

the relations of glycerin to chloroform as regards solubility: neither Gmelin, Brand & Taylor, Gregory, Storer's Dictionary of Solubilities, nor Parrish's Pharmacy, allude to the matter. Dr. Adolphus (see p. 150 of this number) says that glycerin is insoluble in chloroform. We believe, therefore, that this "test" will have to be set aside.

NOTE ON NARCEIA.

By THE EDITOR.

The publication of the results of M. Liné on the physiological powers of narceia (see this journal, Sept., 1866, page 454), and other journals, seems to have attracted the attention of physicians to this ingredient of opium. It has not been considered as possessing much therapeutic interest. Dr. Wood states, in the U. S. Dispensatory (page 623, 12th Edit.), that two grains were introduced into the jugular vein of a dog without observable effect. M. Claude Bernard (*Comptes Rendus*, and this journal, for 1865, page 70) seems to have first called attention to the individual therapeutic character of the alkaloids of opium, and especially to the eminent soporific effects of narceia. According to these experiments the animal sleeps more profoundly, but is not so much stupified, as with morphia, nor so much excited as by codeia. The immense price of this alkaloid (96 dollars per ounce) will prevent its use in a general way, being twelve times the price of morphia. This is mainly the result of its scarcity, as until this time narceia has been thrown away in the liquors from which morphia was extracted, being soluble in alkaline solutions. Nevertheless, according to Couerbe, forty pounds of opium, which yield fifty ounces of morphia, afford but six drachms of narceia; yet when it is considered that thousands of pounds of opium have been and are annually treated for morphia, it must be apparent that if the residual principles had been collected, as those of bark have been, narceia would have been less expensive, and it is quite probable that the price will abate.

The manner of using narceia may be in pills or solution; its solubility varies much from that of morphia, and its relation to acids is quite different. According to M. Hesse (*Amer. Jour.*

Pharm. xxxviii., 472), it requires 1285 parts of cold water, 945 parts of alcohol of 80 per cent., and 800 parts of diluted acetic acid to dissolve it. Liebig gives its solubility in cold water at 375. Acetic acid is not a good solvent for narceia; in fact the acetate of narceia, like the acetate of quinia, is quite insoluble, and is instantly precipitated by mixing solution of acetate of ammonia with solution of hydrochlorate of narceia. The narceia should be triturated with a little water before adding the muriatic acid, because the concentrated acid decomposes this alkali and colors it blue, this being a well-marked test of narceia, and by gently heating after the acid is added the alkali is dissolved and retained in solution, whilst when heated alone in 200 parts of water it dissolves, but on cooling nearly the whole crystallizes out in bulky acicular crystals.

Narceia, according to Couerbe (Gmelin Handb. xvi., 420), is best obtained from the black, dense, mother liquor left after crystallizing out the muriates of morphia and codeia in Gregory's process for morphia. This liquor is evaporated to a syrupy consistence, diluted with water, acidulated with HCl, and allowed to cool, when a matter like ulmin separates and rises to the surface. This is filtered and rendered alkaline by ammonia, which precipitates morphia and thebain as a black precipitate. The liquor filtered is evaporated to a thin syrup, and shaken repeatedly with ether, which removes opianyl. The remaining black liquid, on standing, solidifies to a crystalline mass; the crystals, being narceia, are washed with cold water, collected on paper, pressed, dried, and re-crystallized from alcohol.

NOTE ON SOLUTION OF CITRATE OF MAGNESIA.

EDITOR, AMERICAN JOURNAL OF PHARMACY.

Sir,—From the number of communications published in the Journal of Pharmacy in regard to the preparation of *Liquor Magnesæ Citratis*, I conclude that the following formula, given to me by a former Assistant, Mr. Jas. A. Criswell, of Woodville, Miss., may be of value to some of your readers; I have been preparing it for some time in this way and have never seen any precipitate, nor heard any complaint of its effects from my custo-

mers. Should you think it of sufficient value you can give it a place in your Journal. Prof. Parrish, in his work on Pharmacy, (page 405) says, "if carb. magnesia were used to liberate the gas, the tendency to deposit would be increased," &c., such is certainly not the case with this preparation.

R	Magnesiae carbonatis	℥iii.
	Acidi citrici	℥vi.
	Aquæ puræ	Ov.
	Syrupi simplicis	Oi.
	Ext. limon, q. s.	
	Potass. bicarb., q. s.	

Dissolve the acid in the water, add the carb. magnesia and stir occasionally until dissolved; filter the solution and add the syrup and ext. lemon. Agitate until well mixed and put into eight 12 oz. bottles, add 40 grs. bicarb. potass. to each bottle and cork immediately.

Yours truly,

JOHN T. BUCK.

Jackson, Miss., Jan. 25th, 1867.

NOTE ON "TINCTURA LYCOPERDON."

BY THE EDITOR.

Dr. B. W. Richardson, of London, appears to have been the introducer of the dusty powder from *Lycoperdon bovista*, (known as puff-balls—devils snuff box, etc.,) as a remedial agent. This mushroom is said to be poisonous. When the dried fungus is broken, the pulverulent particles are easily blown away by a puff of wind, and are said to possess anæsthetic properties when inhaled by animals.

Dr. Richardson (*Medical Times and Gazette*, June, 1853, 610) having noticed the use of this dust to stupify bees, he tried the fumes on other animals and upon himself, experiencing symptoms of intoxication and drowsiness, and causing complete anæsthesia in animals, so that they evinced no pain when operated upon.

Recently this substance has been used in Philadelphia as a tincture by Dr. Adinell Hewson, and perhaps by others in cases of nervous disease.

The following recipe, given us by Mr. John Cramer, of this city, is the form most employed.

Take of *Lycoperdon bovista*, four troy ounces.

Boiling water, four fluid ounces.

Stronger alcohol, twelve fluid ounces.

Macerate the powder in the water for twenty-four hours, then add the alcohol, and having mixed them by agitation, macerate for a week. The time may be shortened by percolation. Thus made, this tincture is a dark-reddish brown transparent liquid, of which the dose for an adult is a teaspoonful.

A CONTRIBUTION TO THE STATISTICS OF DRUG POWDERING.

By THOMAS J. COVELL, of Brooklyn, N. Y.

The following table exhibits the principal results of a small business done in powdering drugs for druggists, during the past year or more, at a mill where much care is taken to ensure the best practical results.

The drugs were all of fair quality. No mixing or substitution was practised, and in preparing, drying and powdering, due care was taken to avoid as much as possible injury to the medicinal properties of the drugs, by heating and other bad management too common in this business.

No bad or sophisticated drugs of any kind were ground, nor were any lots admitted to the drying table whose condition of dryness or moisture is very uncommon in the markets; the aim being to present a fair statement of what the average results are in articles of fair merchantable quality.

Such articles as ergot, myrrh, valerian, etc., and the classes they represent, were always powdered under protest, and with a clear statement to the owners of the deterioration which is inevitable in such articles when powdered. Such drugs as cubebs, ergot and oily substances in general, were refused when required in powder so fine as to require drying of the drug; the coarser powders in such articles being always the best, other things being equal.

The table is in two divisions of four columns each. The first

division gives the invoice neat weights and the results thereon. It is well known that commercial usage rarely obtains a very accurate weighing of drugs in the market. Gross weights are handed down through jobbers and brokers, often without verification, from the time the article leaves the ship or manufactory until it is received at the mill; during which time it may have been stored in damp or in dry places, and thus have changed in weight. Again tares are rarely accessible in the markets, but are taken from original markings on the packages, from conversion of foreign weights, or percentage allowance. As these usages are what the druggist has to abide by, they are always obtained as carefully as possible, and the losses calculated upon them, since, in cases where the weights cannot be corrected, or where actual weights are not stipulated for in purchasing, these are the data upon which the druggist must make up his cost price of the powders.

The second division of four columns shows the actual neat weights, of the drugs at the time of receiving them at the mill, and the loss calculated upon this weight. It will be seen that articles which contain but little moisture, and therefore lose little by drying, as gum arabic, catechu, gamboge, and even ipecac and rhubarb, show small losses; and these losses are suffered chiefly in cleaning the mills and putting up the powders in small packages, as 25 pound boxes; when each weighing upon any ordinary scale, takes about two ounces to turn the scale. If such losses, which are common of course to all articles, be subtracted from others where moisture occurs, the remainder will show the excess of moisture for such articles.

In the single article of aloes, every package is melted, thinned with water if required, and strained through a sieve of 60 meshes to the linear inch, the amount of sticks, stones, sand, shreds of aloe plant, pieces of goat skin, etc., thus strained out varies very much; in rare cases amounting to 31 per cent., and again falling as low as 2 per cent., and often averaging as much as eight per cent. This of course very much increases the usual loss, and many druggists will not submit to it, and such have always been desired to take their goods to other mills.

For some comparative results, a table of losses in France will

116 CONTRIBUTION TO STATISTICS OF DRUG POWDERING.

be found in volume 1 of this Journal, and also on page 31, vol. 21, of losses in England; although of early date, comparison shows that great improvements have been made in apparatus as well as in the manipulation.

DRUG POWDERING.

DRUGS POWDERED.	Invoice neat weights and the losses calculated thereon.				Actual neat weights and the losses calculated thereon.			
	Aggregate invoice neat weights.	Greatest loss p. ct. on any single lot.	Smallest loss p. ct. on any single lot.	Average loss per cent.	Aggregate actual neat weights.	Greatest loss p. ct. on any single lot.	Smallest loss p. ct. on any single lot.	Average loss per cent.
Acacia.....	6667	2.64	0.00	0.94	6955	1.88	0.40	0.83
Acacia granulated.....	372	1.67	0.70	1.19	373	1.67	1.03	1.35
Aloe capensis.....	3382	19.31	3.34	10.08	3441	19.31	7.09	11.13
Aloe socotrina.....	12437	24.62	10.00	17.31	12737	24.62	10.00	17.31
Acidum tartaricum.....	21330	2.50	0.00	1.30	21303	2.50	0.54	1.06
Buchu.....	325	4.67	0.00	2.12	325	4.10	0.20	2.00
Canella.....	623	3.07	0.91	1.66	623	3.07	0.50	1.77
Cantharis.....	5289	6.22	0.00	1.94	5320	6.22	0.63	2.05
Cardamomum.....	154	7.10	5.00	6.02	154	7.10	5.00	6.02
Cassa.....	477	7.05	2.58	5.50	466	2.90	2.26	2.61
Catechu.....	338	1.67	0.47	1.07	338	1.30	0.86	1.08
Cinchona flava.....	2053	4.30	1.50	3.01	2044	3.75	1.18	2.57
Cinchona pallida.....	215	2.36	0.00	1.56	216	2.22	0.96	1.73
Cinchona rubra.....	722	5.44	0.00	2.51	718	1.72	1.24	1.58
Cubeba ground.....	1549	3.65	2.42	3.07	1543	3.55	1.99	2.4
Ergota ground.....	1144	5.50	0.00	2.95	1149	5.72	0.00	3.62
Ext. glycyrrhiza.....	1481	13.43	8.14	10.63	1478	13.06	8.14	10.45
Gambogia.....	3071	9.37	0.00	1.94	3054	2.46	0.74	1.35
Gentiana.....	2048	12.20	10.19	11.00	2035	11.79	9.20	10.23
Gentiana ground.....	3560	8.84	3.81	5.89	3532	8.30	1.56	5.09
Ipecacuanha.....	6935	5.53	0.00	2.17	6920	3.66	0.64	1.91
Iris florentina.....	1022	9.30	1.60	6.64	1018	9.00	1.10	6.22
Jalapa.....	8894	13.12	2.67	9.93	8864	12.24	2.95	9.58
Myrrha.....	422	9.54	1.66	6.74	412	8.81	3.59	5.80
Opium.....	6354	29.00	10.25	19.80	6360	22.25	9.91	19.61
Podophyllum.....	279	1.15	0.49	0.75	279	1.15	0.49	0.75
Potassa chloras.....	694	2.57	1.22	1.74	694	2.70	1.52	2.01
Potassa bitartras.....	94989	1.11	0.00	0.38	94998	1.11	0.05	0.38
Pulv. ipecac comp.....	300	1.63	0.38	0.88	301	1.63	0.63	1.05
Rheum.....	5431	6.00	0.20	2.06	5412	3.40	0.10	1.74
Saccharum lactis.....	645	1.27	0.26	0.74	644	0.85	0.70	0.78
Sapo.....	303	18.05	11.70	15.92	303	18.05	11.70	15.92
Sarsaparilla rio negro.....	338	8.11	0.00	3.02	322	0.96	0.35	0.70
Scammonium.....	168	6.00	1.25	2.78	168	5.65	1.33	2.70
Scilla.....	484	16.30	10.51	13.50	485	16.45	10.83	13.66
Valeriana.....	230	1.75	1.45	1.60	229	1.51	1.45	1.48
Tragacantha.....	200	7.38	6.31	6.85	200	7.38	6.47	6.93
Zingiber nigra.....	674	3.13	2.86	2.99	678	3.72	3.13	3.43
Zingiber alba.....	917	11.20	8.94	9.69	917	11.74	8.57	9.70

ON TESTS FOR THE PURITY OF GLYCERIN.

BY J. M. MAISCH.

The application of Trommer's test for the detection of glucose and allied carbohydrates is so frequently made, that every pharmacist might be supposed to be familiar with it; it consists simply in adding to the liquid to be tested a little solution of sulphate of copper and then caustic potassa or soda, until the precipitate at first appearing is redissolved; the mixture is gradually heated to the boiling point, when it becomes turbid and changes its color to yellow and red, if grape sugar, &c., is present. This reduction to suboxide of copper does not take place at the ordinary temperature.

The "Druggists' Circular," for January, contained a communication on "sugar in glycerin," sulphate of copper and potassa being used as the test. Yet, though boiling was resorted to only in one instance, resulting in a failure to get the precipitated suboxide of copper, it was endorsed as "Trommer's test," and as evidence of the presence of glucose. To any one conversant with the manipulation, the "pale tint," "intense blue color" and "particles like flock of wool," spoken of in the communication, will readily explain themselves.

The February number of the "Druggists' Circular" states that the inferences of that communication were incorrect, so far as Bower's Glycerin is concerned, while it is evident that *all* inferences are incorrect. But Dr. Newton further states that "the tests usually applied will lead to a false estimate of its (Bower's or all glycerin?) quality;" the tests, however, are not named.

This statement, if correct, would upset all the researches made thus far on testing for the purity of glycerin. To ascertain the correctness of this assertion, four samples of glycerin were examined, namely: 1, "Vienna" glycerin, bearing the label of F. A. Sarg; 2, Bower's glycerin, recently obtained; 3, the same, which had been on hand about two and a half years; 4, glycerin manufactured in the West. The last was at least thirty months old; when first received, it was colorless and possessed a slight rancid odor; now it is of a pale amber color and its odor is very strong. Nos. 1, 2 and 3 are colorless, 2 and 3 bland and inodorous. No. 1 has a slight rancid odor, which be-

comes rather strong on rubbing it between the hands, particularly near the fire. The specific gravity at 63° F. was 1.252 of No. 1, 1.253 of No. 2, 1.250 of No. 3 and 1.241 of No. 4.

No. 4, when diluted, caused precipitates with several reagents and was set aside. The other samples were subjected to the same tests, under precisely the same conditions. Half a fluid-ounce of each was diluted with sufficient distilled and perfectly pure water to make five fluid-ounces.

Blue and red litmus paper was not affected. With sulphuretted hydrogen and sulphide of ammonium, they remained unchanged; the addition of a trace of solution of acetate of lead caused a brown coloration.

Subacetate of lead, unchanged; the addition of a little soap, tannin or sulphuric acid produced a turbidity.

Chloride of calcium, no change; a minute quantity of oxalate of soda rendered the liquid turbid.

Ferrocyanide of potassium, undisturbed; a trace of proto-sulphate of iron yielded a bluish color.

Oxalate of soda, unchanged with 2 and 3; No. 1 produced a very slight deposit on the side of the test tube after rubbing it with a glass rod; on the addition of a little chloride of calcium, a white turbidity was instantaneously produced.

Nitrate of baryta, precisely as in the foregoing experiment; a white turbidity was occasioned by dilute sulphate of soda.

Alkaline solution of copper had no effect on boiling; after the addition of a trace of honey, and boiling, red suboxide of copper was precipitated.

Alkaline solution of bismuth, on boiling, produced no change; but boiling with a little honey, yielded a black precipitate.

Nitrate of silver had no effect on Nos. 2 and 3, either in the cold or on heating it to the boiling point. With No. 1, a white turbidity was occasioned, and when heated to boiling, a black precipitate was thrown down and the liquid, though transparent, was of a blackish brown color. No. 4 yielded at once a dense turbidity and soon a white precipitate; after heating to boiling, the latter was of a grey color, while the supernatant liquid had acquired a fine rose color. The white turbidity in Nos. 1 and 4 was not removed by nitric acid, but ammonia rendered the liquid clear.

A portion of Nos. 1, 2 and 3 was incinerated in a platinum vessel; the last two left a scarcely observable residue of fixed substances. The fixed residue from No. 1 was more apparent, larger in bulk, but small enough to be of no consequence in an otherwise unobjectionable preparation.

Undiluted glycerin, Nos. 1, 2 and 3, mixed with twice the bulk of 95 per cent. alcohol, yielded clear mixtures; a few drops of sulphate of soda or gum water rendered them turbid.

The original samples, 1, 2 and 3, mixed with twice the bulk of pure concentrated sulphuric acid, produced clear mixtures without change of color; a single drop of simple syrup added to them (glycerin about half a fluidrachm) instantly changed the color to brown, deepening in a minute to brown black, whereby the liquid lost its transparency. A drop of gum water added to the mixture of sulphuric acid and glycerin, after it had been standing for several minutes, re-acted very slowly; but if previously mixed with the glycerin, the addition of two volumes of sulphuric acid instantly caused a brown color, which rapidly deepened to a very dark reddish brown.

These experiments prove that minute quantities of inorganic substances, and likewise all the organic compounds which are likely to be used to adulterate glycerin, can be very readily detected by applying the necessary tests intelligently, and that they will give a correct estimate of its purity.

I have seen a circular regarding the "Vienna" glycerin, which stated that it was equalled only by Price's glycerin. Striking out the little word "only" I subscribe to this with this addition, that Price's even far surpasses this new article, if, I can rely on a series of similar experiments made with it some eight or ten years ago; and with this farther addition, that Bower's glycerin ranks with the best in our market, and that I prefer it even to Price's, because, as far as I may judge from my individual conceptions, it is almost absolutely bland to the taste, while Price's leaves a sense of acrimony in the throat.

I should regard a glycerin as unobjectionable for medicinal purposes, if it forms a colorless mixture with twice its volume of strong alcohol and of sulphuric acid; and if, after previous dilution with distilled water, it yields no turbidity, either cold or on

heating to the boiling point with sulphuretted hydrogen, ferrocyanide of potassium, nitrate of baryta, oxalate of ammonia, or nitrate of silver. This last test I regard as an important one, since I believe that all those compounds, which impart to common glycerin a peculiar rancid odor, will reduce the silver salt and impart a color to the liquid on boiling, even though that odor may be scarcely apparent, while pure glycerin is not affected by boiling with nitrate of silver, although, like nearly all organic and many inorganic compounds, it gradually assumes a darker color on exposure to light.

PHARMACEUTICAL ITEMS.

BY WILLIAM C. BAKES.

Glycerole of Sumach.

With a view of supplying a want for an eligible and permanent preparation of sumach berries, I have adopted the following formula, which yields a preparation possessing in a pleasant and concentrated form the astringent and refrigerant properties of the berries.

Take of Sumach berries sixteen ounces.

Boiling water three pints.

Macerate for one hour and express, and to the dregs add two additional pints of boiling water and proceed as before. Mix the infusions and evaporate to eight fluid-ounces, and add glycerine to make the whole measure sixteen fluid-ounces, and filter through paper.

Elixir of Bismuth.

Inquiries having been made for a preparation by this name, and finding no established formula, I have suggested a very simple combination which seems to answer a good purpose.

Take of Solution of ammonio citrate of bismuth 12 fluidounces.

Curaçoa cordial

4 “

The Curaçoa imparts to the preparation a very pleasant flavor, and will be found a valuable adjuvant in the administration of this favorite remedy.

Iodided Opodeldoc.

This preparation, though known for a number of years, has not

received the attention it merits, and with a view of bringing it more to the notice of the profession, I give the formula.

Take of Iodide of Potassium eight troyounces.

Alcohol, 30° Baumé, two pints.

Mix the above and form a perfect solution.

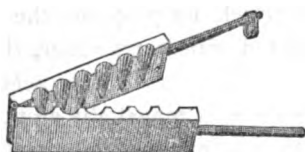
Animal soap finely shaved fourteen troyounces.

Alcohol, 30° Baumé, two pints.

Dissolve the soap in the alcohol in a flask over a sand bath; when dissolved mix the two solutions and add

Oil of garden lavender two drachms.

This is usually dispensed in one or two ounce wide mouth vials, which should be filled while the opodeldoc is warm and in a fluid condition; when cold it forms a translucent mass, melting at the temperature of the body, and as an external application, possessing many advantages over the ointment of iodide of potassium.



ON A NEW SUPPOSITORY MOULD.

Messrs. Bullock & Crenshaw, of Philadelphia, have gotten up a new and convenient mould for making Suppositories. The cut shows the form of the mould, which is constructed of brass. The instrument opens on a hinge at one end; a pin and hole at the opposite end secures proper adjustment of the two surfaces, which are accurately ground to each other, and form six perfectly smooth matrices. A sliding ring on the handles, which are set at a slight angle to each other, forms a sufficient clamp to retain the melted material.

In using the mould, they heat the material only to the point of liquefaction, and pour it into the matrices, (which should be previously rubbed with a little olive oil on cotton or wash leather); the mould is then placed in cold water until the material has solidified. To remove the suppositories, plunge the mould for an instant into water warmed to about 100° F., then open it, and, by

carefully pressing with the finger against the large end of each casting, it is discharged from the matrice. They use pure butter of cocoa as the basis during the winter months—for warm weather, the addition of from one-sixteenth to one-twentieth of *paraffin* gives a good consistency. (Paraffin is better than wax.)

To incorporate extractive matter with the butter of cocoa, they rub the extract to a thin paste with alcohol; then add sufficient butter of cocoa to form a powder, incorporate this with the remainder of the butter of cocoa, in a semifluid condition, and form the suppositories by casting.

On inquiry, we find that this mould may be obtained of Messrs. B. & C. for the sum of five dollars.

ON RHÆADINA.

By O. HESSE.

A peculiar alkaloid was found by the author in all parts of *Papaver Rhœas*, for which he proposes the name of *rhœadina*. The plant is exhausted with warm water, the infusion concentrated at a moderate heat, the slightly acid extract is treated with carbonate of soda, and repeatedly agitated with ether; the ether is shaken with a solution of bitartrate of soda, and this liquid precipitated by ammonia. The greyish white voluminous precipitate soon becomes dense and crystalline, is washed with cold water, dried and boiled with alcohol, which removes coloring matter, and another alkaloid, present only in small quantity, apparently thebaine. To obtain it pure, the alkaloid is combined with acetic acid, treated with animal charcoal, and precipitated by ammonia.

Rhœadina crystallizes in small white prisms which are almost insoluble in ether, benzine, chloroform, alcohol, water, ammonia, carbonate of soda and lime-water. At 18° C., it requires 1280 parts ether for solution. Like its solutions in acids, it is tasteless, and not poisonous. Its composition is $C_{12}H_{21}NO_{11}$. It fuses at 232° C., becomes brown, while another portion sublimes. It sublimes best in a current of carbonic acid.

Dilute acids, if not in excess, produce with the alkaloid colorless solutions in the cold; muriatic and sulphuric acid of moder-

ate concentration dissolve it at once, with a purple color. This solution becomes colorless by alkalies, but purple again on the addition of acids. One part of the alkaloid, yielding only about 5 per cent. coloring matter, produces, with 10,000 parts water, a purple, with 20,000, an intense rose, and with 800,000, a perceptible red color, equal to one part of the coloring matter in sixteen millions parts of water.

By this delicate reaction, rhœadina can be detected in all parts of *Papaver Rhœas*, in the ripe capsules of *Papaver somniferum*, and in opium. The aqueous infusion of opium is precipitated by carbonate of soda or lime, the filtrate treated with ether, and the ether agitated with water acidulated with muriatic acid. This solution acquires the color, particularly on heating. A portion of the rhœadina remains with the precipitate, and may be detected in the same manner. Merck's porphyroxyn contains less than one part of this alkaloid.

Concentrated sulphuric acid dissolves rhœadina with olive green, nitric acid, with yellow color.

The colorless solution in muriatic acid is precipitated by tannin, corrosive sublimate, iodohydrargyrate of potassium, terchloride of gold, and bichloride of platinum.

The purple solution of rhœadina in acids is rendered colorless by repeated treatment with animal charcoal, and contains now another alkaloid, *rhœagenina*, which is precipitated by ammonia, and purified from hot alcohol. It occurs in small white prisms, sparingly soluble in ether, alcohol, water and ammonia, readily soluble in acids without coloration, except nitric acid, which decomposes it, producing a yellow color. It is tasteless, but the salts are bitter. It is fusible, but not sublimable, and is a strong base of the composition $C_{42}H_{21}NO_{12}$.

The author describes the sulphate and several other salts, all of which are uncrystallizable. He then suggests the relation of rhœadina with sanguinarina, from which it differs by lactic acid $C_{42}H_{21}NO_{12} + 2HO = C_{36}H_{17}NO_8 + C_6H_6O_6$; the formation of a red coloring alkaloid, and, as obtained by J. and H. Smith, the production of lactic acid from opium, under certain circumstances, seem to favor this relation. It also differs from Merck's papaverina only by the elements of carbonic acid ($C_{42}H_{21}NO_{12} =$

$C_{40}H_{21}NO_8 + C_2O_4$); a little carbonic acid is evolved when rhœadina is boiled continually with sulphuric acid.—*Annalen der Chem. und Pharm.* cxl. 145—153.

J. M. M.

ON THE POISONOUS PROPERTIES OF THE BOUNDOU, PROOF POISON OF THE GABONESE.

BY M. M. PECHOLIER AND SAINT PIERRE.

The Boundou (Icaja or M'Boundou) is a tree of the family Apocynæ which partakes, with other plants of this family (Oleander) the property of being a violent poison. It is used in Gabon (Africa) to prepare the proof liquor in judicial duels. (See Thesis of M. Touchard; Montpellier, 1864.)

We have been very fortunate in procuring some roots of this tree, thanks to the kindness of Dr. Falot, a distinguished physician of the Imperial navy. The small quantity of the product has not permitted us to undertake a research for its active principle, but we have assayed with the aqueous and alcoholic extracts to determine the poisonous action of this vegetable. Several animals (rabbits, dogs, frogs, etc.) have been poisoned in the experiments, the results of which we have the honor to present to the Academy.

1st. Boundou contains an active principle, soluble in both water and alcohol.

2d. This poison has a mode of action analagous to that of nuxvomica; that is to say, its effects are principally on the system of sensitive nerves.

3d. Administered either by the stomach or by the endermic method, it produces at first an augmentation of the number of inspirations and pulsations of the heart, followed by a considerable diminution of these movements.

4th. This poison causes at the same time an increase of sensibility, followed by tetanic convulsions; finally, insensibility, paralysis and death.

5th. Its action on the nerves of motion is but secondary; it does not effect the contractility of the muscles. It is not a heart poison; this organ, on the contrary, continues to beat some time after death.

6th. In many experiments where we have observed very grave symptoms and apparent death, we have seen the animals slowly return to life. If, as is reasonable to think, the action on man is identical, we can understand why the Boundou has been chosen by the Gabonese for a proof poison. In the judgment of God, the champions recover slowly from the worst symptoms, but are restored gradually to health, seemingly recalled to life by the divinity, jealous of demonstrating their innocence.—*Comptes Rendus in Jour. de Pharm. Janv. 1867.*

ON A METHOD OF DISTINGUISHING ARSENIURETTED HYDROGEN FROM ANTIMONIURETTED HYDROGEN.

BY M. DRAGENDORFF.

This process is founded on the action exercised by solid caustic potassa, in fragments, on antimoniuiretted hydrogen, precipitating the metal from it, whilst no such effect is produced on arseniuiretted hydrogen. If, therefore, a mixture of the two gases is passed through a tube filled with fragments of the alkali a complete separation is effected, and the arsenical gas may be burned separately. The fragments are coated with a brilliant layer of antimony. A ley of potassa sp. gr. 1.25. has but little effect. When the mixture of antimony and potassa is exposed to the air the former is oxidized, and assumes the form of antimoniate of potassa when the mixture is placed in contact with water.—*Jour. de Pharm. Janv. 1867.*

OXALATE OF IRON A NEW TONIC.

The following communication from Mr. J. Emerson Reynolds has been addressed to 'The Medical Press and Circular' of Nov. 28.—“Allow me to draw your attention to a preparation of iron, which has been much neglected, if not altogether overlooked. I refer to the oxalate of the protoxide of iron. Having lately used it in cases requiring the exhibition of a compound of the metal, I observed that it was borne with remarkable ease by the stomach, possessed little if any astringency, and produced the usual constitutional effect with sufficient rapidity. The salt is

easily prepared by adding a solution of protosulphate of iron to an excess of oxalate of ammonia solution containing a little free oxalic acid, a yellow precipitate is thrown down, which is the compound in question; this should be well washed and then dried. By having an excess of oxalic acid present any per-salt formed is held in solution. The precipitate yielded on analysis results agreeing with the formula $\text{Fe O, C}_2\text{O}_3 + 4\text{HO}$, and therefore contains one-third of its weight of oxide of iron, one-third of oxalic anhydride, and the rest of water. The salt, when prepared as above directed, is a fine powder of a straw-yellow color, almost devoid of taste and singularly slow to oxidize in contact with the air. It is slightly soluble in water, but more easily acted upon by a dilute acid, and is decomposed by the alkalis of their carbonates. When burned in the open air it leaves a residue of pure peroxide of iron in a condition particularly favorable for the production of *fer réduit*. In conclusion, I may remark that the oxalate of iron requires but *three* atoms of oxygen for its complete oxidation in the system, whereas for a given weight of iron the tartrate of the peroxide needs *ten* equivalents, and the citrate *eighteen* of oxygen, to effect the same end."*—*Pharm. Journal*, Jan. 1867.

ON THE EFFECT OF TEMPERATURE ON ORGANIC MATTER IN WATER.

Dr. Frankland writes:—"With regard to the temperature at which the putrefaction and decay of organic matter in water take place, I find that the following is all that appears in the printed report of my evidence on the subject in the case 'Duke of Buccleuch and others v. Alexander Cowan and others,' recently tried at Edinburgh. 'Where a river becomes sluggish—as where it is pent up by a weir—the quantity of organic matter, and also of mineral matter, increases in some cases very considerably; but that is only the case in warm weather, and the temperature of the water must be 55° Fahrenheit and upwards, for this effect to be produced. The putrefaction of the

*[This salt has been recommended as a chalybeate by Prof. Craig, of the Smithsonian Institution as far back as 1858.—Ed. Am. Jour. Pharm.]

mud in the bed of the river ensues, and the previously insoluble matter becomes soluble matter.' The safest and most sensitive test of putrefaction in water is the relative proportion of oxygen to nitrogen in the dissolved gases. The river North Esk, as it flowed through the Duke of Buccleugh's grounds, at Dalkeith Palace, in March and in June last, afforded striking evidence of this kind as to the effect of temperature upon the absorption of oxygen by the organic matter of water. (It is only when the whole of the oxygen dissolved in the water is consumed, that the latter assumes a true and offensive putrefactive condition.) On the 3d of March, the temperature of the water in the North Esk was 38° Fahrenheit, and the proportion of oxygen to nitrogen in the dissolved gases was $O : N = 1 : 2.02$. This is the normal proportion in water free from organic matter. On the 21st of June, the river emitted a putrid odor, the temperature of the water was 60° Fahrenheit, and the proportion of oxygen to nitrogen was $O : N = 1 : 25$; thus the amount of dissolved oxygen was reduced to a mere trace, and the organic matter was in a putrescent condition."—*Lond. Chem. News*, December 7, 1866.

HIVE SYRUP.

By L. W. GILLESPIE.

In looking round for a process to test the capabilities of dialysis in its application to pharmacy, it occurred to me that the compound syrup of squills would afford a very good example, and one of great value to the pharmacist, if successful, in rendering this preparation permanent, and in doing away with the use of alcohol in its manufacture. With these ideas in view I made three separate solutions, one with dilute alcohol, as directed in the *Pharmacopœia*, another by using only half the amount of alcohol, and a third by boiling in water as formerly practised. This last failed to produce anything like a satisfactory result, and I had to abandon all idea of being able to dispense with the use of alcohol in its manufacture. With the second process I was more successful; yet still a large amount of pectin and gum refused

to pass through the dialyser. The first process in which dilute alcohol had been used succeeded perfectly, and I have no doubt will keep as long as any other syrup of the Pharmacopœia; though sufficient time has not yet elapsed to test its keeping qualities. All that is necessary is to make a tincture of the squills and senega as directed in the Pharmacopœia. Place this solution in a porous vessel surrounded with water and put aside to dialyse. After the lapse of forty-eight hours the water contained in the outer vessel will be found to have become quite thick and syrupy, owing to the presence of a large amount of gummy substances which, first pass through the porous diaphragm and dissolving in the surrounding water, leave behind the crystalline compounds, hardly a trace of which can be found in the water, showing that in this case the accuracy of the process is due to the great difference in the specific gravity of the two liquids, which is also the reason of the failure of the aqueous decoction. The process is completed by evaporating the solution contained in the inner vessel and making it into a syrup as directed in the Pharmacopœia.

In the course of my experiments a few practical ideas suggested themselves which are absolutely necessary to be considered in conducting this process. The greater the difference in the specific gravity of the two liquids the more accurate will be the results obtained. So also as regards the solubility of the different salts held in solution. Light and warmth hasten the process of dialysis very materially, and care should be taken to keep the two liquids at the same height until the process is completed. The diaphragm ought to be made of the best white porous ware, and before using should be soaked in dilute nitric acid, and afterwards well washed in water to remove all soluble salts. When such a vessel cannot be obtained, a common flower-pot will answer instead. In conclusion, it is my belief, that owing to the inaccuracy of the process of dialysis it can never be very extensively used in Pharmacy.

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The Drug. Cir. and Chem. Gazette.

IMPROVED PROCESS FOR OFFICIAL FLUID EXTRACT OF BUCHU.

BY EDWARD R. SQUIBB, M. D., OF BROOKLYN.

To the American Pharmaceutical Association :

As a member of your Committee upon the United States Pharmacopœia, the writer begs to offer the following criticism upon the official process for Fluid Extract of Buchu, and to suggest some slight modifications which may be improvements if applied with the necessary care and skill. The official process is as follows :

“Take of Buchu, in moderately fine powder, sixteen troy-ounces ;

Alcohol a sufficient quantity.

Moisten the Buchu with six fluidounces of alcohol, introduce it into a cylindrical percolator, press it firmly, and gradually pour alcohol upon it until twelve fluidounces of tincture have passed. Set this aside, and continue the percolation until two pints more of tincture have been obtained ; evaporate this by means of a water bath, at a temperature not exceeding 150°, to four fluidounces, and mix it with the reserved tincture. Allow the mixture to stand for twenty-four hours, and filter through paper.”

The writer, as a member of the Committee of Revision which adopted this formula, in criticising its language, is but reproducing here arguments used in the Committee, and overruled there by much better scholars than himself, and upon competent authority ; and to bring these views forward now in public may well be taken as evidence of captiousness, and unwillingness to submit to authority ; or of a self-sufficient stubbornness which often accompanies ignorance. Still it will do no harm to others, in view of future revisions, to have the language as well as the process re-examined and re-confirmed if it be right. This is the first formula under the head of the Fluid Extracts, and its language in the points to be criticised is a type of the entire Pharmacopœia, and its process is typical of the whole class of Fluid Extracts.

Language is made to express ideas, and grammar is made for language ; and, therefore, when language expresses ideas best and most definitely, grammar should establish its construction.

The writer believes the sentence "until twelve fluidounces of tincture have passed," and all others like it, to be faulty in construction. Although "twelve fluidounces" taken alone as an abstract number of ounces is undoubtedly plural, yet "twelve fluidounces of tincture" as a prescribed quantity or measure is no more plural than "a pint" would be. Besides, the "twelve fluidounces" is not the real subject of the verb, but rather an adjective used to qualify or define the quantity of the tincture, which tincture in such quantity is the real subject or nominative of the verb. This being singular would require the verb in the singular also. Suppose the sentence was constructed to read "until three-fourths of a pint of tincture," or "until the measure of twelve fluidounces of tincture," there would then be still greater difficulty in the way of using the plural of the verb. Besides this, the present construction contradicts, or rather corrects itself, in the first two words of the next sentence.

For consistency or unity of idea, as well as for the uniformity of grammatical construction, these words should be "Set these," the twelve fluidounces of tincture being understood, and not as at present, "Set this." The same sentence thus commencing with one measure in the singular ends with another prescribed measure, namely, "two pints more of tincture," in the plural. The next sentence takes up this plural again as a singular by saying, "evaporate this"—two pints more of tincture being understood, and being plural here if anywhere—"to four fluidounces" and mix "it" with the reserved tincture. The words "four fluidounces" are here used as a measure, but here do *not* render the tincture plural. For these reasons the writer argues that the phraseology should be made to carry the idea clearly, rather than to carry out a system of grammar whose rigidity in parsing governs the *subject* of a verb by a preposition, and thus converting it, through a subject, into the *objective* case, while the so parsed preposition is in reality only a conjunction used to unite a qualifying or defining adjective expression to the noun to which it belongs.

The word "tincture" seems to be badly chosen for use in this connection, since it tends to confuse this class with the class of

"tinctures," while the word percolate would appear to be more accurate as well as more appropriate.

The next criticism is upon the more important points of the practical application of the process; and here the writer feels much more within his own legitimate sphere. "Buchu in moderately fine powder" is directed. This degree of fineness is defined, on page 7, as being obtained by a sieve of fifty meshes to the inch. The writer's experience indicates that a much finer powder is better; that the ordinary dusted powder, which passes easily through a sieve of one hundred and twenty meshes to the inch, works well in practice on any scale; and that it is impossible to have the powder too fine. The most important of the cardinal rules which apply to successful percolation, and that upon which the success almost entirely depends, is the rate at which the percolate passes, and this cannot be well controlled in the use of coarse powders.

In the use of the Pharmacopœia quantities, or indeed upon any moderate scale, the percolate should pass off not faster than a drop in each second at first, getting a little faster as the exhaustion progresses. The most successful and thorough percolations are the slowest, and such require the smallest quantity of menstruum for exhausting. The best efforts of the writer, when operating on quantities of from thirty to fifty times the official formulas, have been with dusted powders, percolated at the rate of a drop for every three seconds, or twenty drops a minute, this rate being obtained of course through the fineness of the powder as well as by the packing.

The next point to be noticed is that the quantity (two pints) of weak percolate directed to be obtained is excessive in view of the present cost of alcohol, and the amount of medicinal extract obtained by it. The s. g. of the alcohol used as the menstruum is .835. That of the reserved percolate is .914. That of the first of the two pints of weak percolate is .861. And that of the second of the two pints is .844. This two pints of weak percolate, when evaporated slowly to four fluidounces, has a specific gravity of 1.049, much of which gravity is due to oxidation during the evaporation. When the two portions are mixed together, and before the filtration, the s. g. is .953. After filtration it is .946.

It follows, from these observations, that specific gravity is a good and sufficient indication of the strength of the percolate, and therefore of exhaustion of the drug. And it also follows, from a crude but practical calculation or estimate, based on the specific gravities and the inert residues, that the first pint of weak percolate cannot contain more of the medicinal properties of the drug than would be contained in two and a half ounces of the powdered buchu; and that the second pint could not contain more than one seventh of this. The medicinal properties of the drug would thus be distributed in the percolate as follows:

First 12 f $\bar{3}$, or reserved percolate, represents	18.14	3
First pint of weak percolate	"	2.50 "
Second " "	"	0.36 "
	<hr/>	
	16.00	"

From this it appears that the process might be terminated at the end of the first pint of weak percolate with the loss of thirty-six hundredths of the medicinal strength of one troyounce of buchu, but with the saving of one pint of alcohol; always provided the percolation be skilfully conducted.

The next point to be noticed is that the evaporation of the two pints of weak percolate to four fluidounces, much of the medicinal portion is sacrificed,—first by being driven off, and second by oxidation and other changes. A very considerable portion of the deposit which occurs during this evaporation is insoluble in the original menstruum.

Finally, the filtration through paper is tedious and wasteful. Even when accomplished through a covered funnel into a bottle, the loss by evaporation in moderately warm weather was two fluidounces; and the portion which refused to pass through measured nearly one fluidounce more.

The cost of a pint of this fluid extract by the officinal process is nearly as follows,—the pint weighing a little over fourteen ounces avoirdupois:

16 troy ounces=1 lb. 1 $\frac{1}{4}$ oz. avoirdupois.	
of Buchu, powdered,	. . \$.90
3 $\frac{1}{2}$ pints Alcohol,	. . 1.79
	<hr/>
	\$2.69

And this without estimating apparatus, labor, time, skill, interest, risk, insurance, or anything but real cost of material used: and of this material the alcohol costs twice as much as the drug.

As one way of remedying the disadvantages complained of, the writer would suggest to the next Committee of Revision the following process:

Take of Buchu, in very fine powder, 48 troyounces.

Alcohol, a sufficient quantity.

Divide the buchu into three equal portions. Moisten one portion with six fluidounces of alcohol, pack it moderately in a cylindrical percolator, and pour three pints of alcohol upon it. When the last of the alcohol disappears below the surface of the powder, remove the disc of muslin or paper from the surface, and fill up the percolator with water. Then, as the percolation slackens, scrape off the upper softened layer of the exhausted powder, and mix it thoroughly with the water by means of a square-ended wooden spatula. This scraping off of the softened portion without disturbing the hard part below is to be repeated at intervals, according to the rate of percolation, until the water becomes thick with the swollen and exhausted powder. It is then poured off and replaced with fresh water, and the scraping continued as before; and this management is repeated, more cautiously toward the close, until the alcohol is all pushed through, and water appears at the outlet of the percolator.

Receive the percolate in four separate portions of twelve, six, eight, and twenty-two to twenty-four fluidounces, and set aside the first portion of twelve fluidounces as reserved percolate.

Moisten a second portion of the buchu with the second portion of the percolate from the first percolation (the six fluidounces), pack it in a second cylindrical percolator (or the first one re-adjusted), and pour upon it the third portion of the percolate from the first percolation. When this has all been absorbed by the powder, add the remainder of the percolate from the first; and when this has disappeared, add first two fluidounces and then four fluidounces of alcohol; and then water, managing the process precisely as in the first percolation.

Receive the percolate in four separate portions of sixteen, six, eight, and ten fluidounces, and set aside the first portion of sixteen fluidounces as reserved percolate.

Moisten the remainder of the buchu with the second portion of the percolate from the second percolation, and having packed it in the cylindrical percolator, pour on the third and fourth portions of the percolate from the second percolation in succession, and after these, eight fluidounces of alcohol in two portions. Finally add water, and proceed as in the first percolation.

Receive the percolate in two separate portions of twenty and ten fluidounces (or the remainder), and set the last of these away, to be used as so much alcohol at the next making of this fluid extract.

Finally, mix all the three portions of reserved percolate together, and make the whole measure three pints by the addition of whatever may be wanting of that measure from the final percolate set away for the next making.

In repeating this process twice with care, it was found to work well in practice, and to yield a preparation which is at least equal to the officinal in therapeutic value.

The total quantities of material used are as follows:

Powdered Buchu, 3 lbs. 5½ oz. @ 80 cts.,	\$2.67
Alcohol, 4½ pints, @ 55 cts.,	2.34

For three pints, weighing 2 lbs. 11 oz.,	\$5.01
“ one “ “ 14 oz.,	1.67

This requires but one more pint of alcohol for the three portions than the officinal process requires for one portion, and diminishes the cost exceedingly; but it requires more education and skill, and involves more risk of an imperfect preparation through want of skill. The result of the first percolation is least important, since the quantity of menstruum there used is as great as in the officinal process, and the exhaustion thereby secured; but as the errors of packing and management are easily seen in this first percolation, they can be as easily corrected in the succeeding trials, and thus tend to safety and uniformity of result.

The powder, when properly moistened and packed, holds with great uniformity about fifteen fluidounces of menstruum, and by the dexterous use of water, as directed, eleven fluidounces of this may be each time recovered by pushing it through. Thus the total loss of alcohol in this way does not exceed twelve to fifteen

fluidounces, the remainder of the twenty fluidounces being lost by evaporation.

The s. g. of the first reserved percolate, namely, the twelve fluidounces, is .910 to .912. That of the second reserved percolate, namely, the sixteen fluidounces, is .915. That of the third, namely, the twenty fluidounces, is .912. That of the whole when mixed together is .914. The s. g. of the first twelve fluidounces of the three percolations is .910, .924, and .926. In the official process it is .914. Each four fluidounces, after the twelve, of the middle percolation, is .887, .873, .867, .862, .855 and .848. And each four fluidounces requires about two hours to pass when the percolation is most successful. The two final portions of four fluidounces each, set away for the next making, have specific gravities .867 and .857.

Although one percolator is sufficient to carry out the process, the time may be considerably shortened by the use of two, since the second one may then be packed as soon as the second portion of the percolate from the first is received. Flasks marked to the measured quantity in the neck should always be used to receive the percolate, otherwise the evaporation from each drop as it accumulates in a slow percolation entails great loss.

The first twelve fluidounces of percolate, both in the official and the proposed process, must represent more than twelve troy-ounces of the drug, and yet its s. g. is far below that of the finished official preparation, and a little below that of the proposed preparation; thus showing that s. g., though a good indication of exhaustion, is not so good an indication of medicinal value.

The avoiding of heating, evaporating, and filtering in the proposed process, are considered to be of primary importance.—*Proceed. Amer. Pharm. Assoc.*, 1866.

NOTE ON PURIFIED ESSENTIAL OIL OF ALMONDS.

BY WILLIAM A. TILDEN, F. C. S.

Demonstrator in the Laboratory of the Pharmaceutical Society of Great Britain.

A few days ago I came upon two specimens of essential oil of almonds which I had prepared in 1864 in illustration of a short

communication I had the honor of reading at one of the evening meetings of this Society. I suggested, at that time, that it was probable this essential oil might be rendered more permanent than in the purified state it is generally found to be by introducing into it some fused chloride of calcium, so as to remove from it the last traces of moisture.

These specimens I produce in support of that suggestion ; they have been prepared upwards of two years, and have been preserved side by side under precisely the same conditions. The one, as you see, is filled with crystals of benzoic acid ; the other in which is placed a fragment of chloride of calcium, is perfectly free from crystalline deposit, and remains quite fluid. These bottles seem to me to exhibit clearly the very decided influence of perfect drying.* Shortly after the publication of my paper, a wholesale drug firm in this city wrote to the "Pharmaceutical Journal," announcing that the purified essence prepared by their process was perfectly free from the objection attaching to purified oil of almonds in general, being permanent and inalterable for any indefinite period. As this was quite in opposition to the remarks made by myself and others at the meeting referred to, I was anxious to test their statement, it being an interesting point to determine, whether it were indeed possible to render the almond essence less susceptible of oxidation. I accordingly procured a quantity of this essential oil.

It was examined, first of all, for the evidence of change, for benzoic acid. It was found to be strongly acid to test-paper, although no crystallization was apparent except at the stopper. This circumstance, coupled with the limpidity of the liquid, and its sp. gr., which was as low as 1.003 or thereabouts, led me to suspect the admixture of spirit of wine. On application of Dr. Redwood's test, fuming nitric acid, it gave, as anticipated, abundant evidence of alcohol by the violent evolution of nitrous fumes. Here also proof was obtained that the change effected in the liquid by the air was in an advanced stage, for, on cooling, the

*I am informed by Mr. C. Umney, who is in the habit of purifying essential oil of almonds on a large scale, that he has found the above plan of desiccation by means of chloride of calcium to succeed perfectly in preventing change in the purified oil.

mixture became nearly solid from the deposition of nitrobenzoic acid. Two other (pure) specimens tried at the same time, remained fluid many days.

Not content with the nitric acid test alone, I separated a quantity of the alcohol bodily by the following plan, which may equally well be applied to any other essential oil:—Six measures of the oil were agitated with six measures of water in a graduated tube; on standing, $4\frac{1}{2}$ measures of oil only subsided; the aqueous liquid was separated by a pipette and saturated with carbonate of potash; on remaining at rest a few minutes, about one measure of alcohol separated as an oily stratum floating on the surface. It was recognized by the ordinary tests. I have examined other samples of commercial purified oil of almonds. They are certainly all equally liable to change, the permanence of those which are alleged to be inalterable being only in appearance, the benzoic acid, as formed, remaining in solution. The addition of alcohol would, moreover, tend, in my opinion, to facilitate rather than obstruct the absorption of oxygen.—*London Phar. Jour.*, Dec., 1866.

REMARKS ON SOME CHEMICAL PROCESSES

BY C. LEWIS DIEHL, JR.

The object of this paper is to point out some difficulties that are met with by the manufacturing chemist and by the pharmacist in the pursuit of his calling. Our standard works on chemistry and pharmacy will give formulas which, if strictly followed and properly understood, will generally yield the desired product. Yet sometimes the operation will fail, notwithstanding the greatest care on the part of the operator, and will cause him to regard a process as faulty, which would really yield a handsome product if carried out with the proper attention to the minor details. Manufacturing chemists, as a general rule, will not publish their experience in the manufacture of their preparations, as they wish to make as much capital out of any improved process they may have, as possible. It is to be regretted that they do not show more disinterestedness in this respect, as by the publication of their experience they would greatly advance

the cause of science. The efforts of Dr. E. R. Squibb in that line are truly commendable, and to him are due many improved chemical processes now extensively applied. His example should be imitated by all true friends of science; the plea that it is against their interest to publish the result of their experience, may be met with the simple argument "that he who is capable of inventing or improving a process, will always have the start of the one who has to wait for the invention."

In explanation of the remarks I am about to make, I wish to state that I offer them simply as the result of my own experience. I do not claim any originality to any of them. I merely wish to point out the difficulties I have had, and how I have overcome them.

Acid. Phosphor. Dilut. The U.-S. Pharm. directs this to be made in a porcelain dish, covered with a glass funnel. The difficulty that occurred to me was caused by the frequent breakage of the funnel and consequent loss of phosphorus, not to speak of the annoyance to the operator. This breakage is almost always caused by the addition of the water or nitric acid to the materials during reaction, and notwithstanding I always observed the greatest care in the addition, breakage could not be avoided. I therefore concluded to try the old method, by oxidizing the phosphorus in a glass retort, with results entirely satisfactory. The following is the process pursued by me, which I can recommend as perfectly safe:

Introduce into a French glass tubulated retort of capacity of 42 parts, 12 parts of water and two parts of phosphorus. Place the retort on a sand bath and introduce through a funnel tube, fixed in the tubulure by means of a cork and reaching half an inch below the level of the liquid, eight parts of nitric acid. Apply gentle heat and watch the operation closely as soon as reaction commences. When the reaction slackens add more nitric acid in portions of about one-fourth part at a time. Should the reaction become violent, small quantities of warm water must be added until it is reduced to its ordinary action, which may be compared to the gentle boiling of water. The formation of frothy bubbles on the surface of the liquid is always the forerunner of violent reaction and should be checked at once. I

have found that if it was checked at this stage, a comparatively small amount of water would answer, but if allowed to react violently a much larger quantity of water was necessary. The evaporation of the acid, after the phosphorus is all oxidized, is conducted in a porcelain capsule; towards the end of this process it will froth up, owing to the rapid disengagement of nitric oxide. The dish must therefore have about three times the capacity of the acid when concentrated, and a little distilled water should be kept conveniently near, to add in case there is danger of frothing over. It is scarcely necessary to add that the operation should be conducted under a good furnace hood, or otherwise the beak of the retort should be introduced into a good flue.

Sulphate of Manganese. Wishing to make some of this salt, I adopted the following formula, which gives an abundant yield of the pure salt:

Introduce into an iron crucible a mixture of five parts of peroxide of manganese and three-fourth parts of coarsely powdered charcoal. Cover the crucible and heat to redness until all the charcoal is consumed. Allow the contents of the crucible to cool, place in a porcelain dish and add $6\frac{1}{2}$ parts of sulphuric acid. Evaporate nearly to dryness, return the mass to the crucible and heat to redness. When cool run to powder, if necessary, and treat twice successively with eight parts of boiling water; mix the liquors, filter and evaporate until a pellicle begins to form, when set aside to crystallize.

If evaporated too far an insoluble sulphate is deposited, (probably in a peculiar state of hydration), hence care must be taken to remove it from the sand-bath as soon as a pellicle begins to form. When a good article of peroxide of manganese is used, this formula will give an abundant yield of perfectly pure sulphate of manganese. Any iron or copper present is destroyed by heating the crude salt to redness.

Ammonio-ferric Alum. In making this salt according to the U. S. Pharm. formula I found that, instead of obtaining crystals of a clear violet tinge, they had a brownish color. I first ascribed it to unskilful manipulation, but on repeated trials met with similar results, sometimes, however, approaching in appearance to

the commercial article. As the addition of a small quantity of sulphuric acid to a solution of salt prevents its decomposition, caused by the formation of a basic ferruginous salt, I concluded to try the effect of a little sulphuric acid, and met with perfect success. By the addition of 1 fl. oz. sulphuric acid to 1 gall. liquor ferri tersulphat., I obtained crystals of a beautiful violet tinge and perfect form. These were simply drained thoroughly and immediately bottled. I have been so far unable to obtain the salt perfectly dry without injuring its appearance. The mother liquors will yield another cup of crystals if evaporated gently and filtered. If the solution is not filtered the salt will have a rusty appearance from the decomposition of a portion of the salt. When large quantities are made it is better to use the mother liquors with a new portion of materials.

Tinct. Chlor. Iron. When the Pharmacopœia direction is strictly followed in making the solution of sesqui-chloride of iron for this tincture, there is danger of the liquid frothing over towards the completion of the process, unless the capacity of the dish is very much larger than the bulk of its contents. By long-continued heat a portion of the muriatic acid, present in the preparation before the oxidation is completed, is also wasted and frequently sufficient to cause a basic chloride to be formed, which, when mixed with the alcohol, is deposited, sometimes immediately, sometimes after the lapse of a few weeks. This has happened to me on several occasions, and others have had similar experience. For several years I have pursued the following manipulation in its manufacture, and have met with invariably satisfactory results. The materials and relative proportions used are the same as in the official process:

Make the solution of proto-chloride of iron according to the official directions and filter. Heat it to the boiling point, add the reserved portion of muriatic acid, and take immediately from the sand-bath. Into another vessel (capable of holding one-half more than the solution will measure when completed), pour three-fourths of the nitric acid required. Place the vessel in the sand-bath from which the solution of chloride of iron has been removed, and add the latter in small portions as long as effervescence is produced. If effervescence should cease before all

the iron salt is oxidized, nitric acid must be added in small portions until the completion of the process. Proceeding in this manner the same result is obtained as required by the Pharmacopœia, the danger of frothing is avoided and a permanent tincture is obtained.

Dilute Hydrocyanic Acid. It is well known that when this acid is not carefully secluded from light it is rapidly decomposed and deposits a black substance (Paracyanogen). Wittstein, in his formula for this acid, recommends the use of alcohol as a preservative, and I wish to state that I have prepared an acid according to this formula which has kept without any apparent change for four months, although freely exposed to the light during that entire period. His formula is as follows :

Dissolve 4 oz. ferrocyanide of potassium in 16 oz. of distilled water, to which add a cold mixture of 3 oz. sulphuric acid and 12 oz. alcohol, sp. gr. .840. Allow the mixture to stand for twenty-four hours, shaking it occasionally. Separate the crystalline deposit by means of a strainer and introduce the clear liquid into a retort, the bottom of which is covered to the depth of one inch with clean quartz sand. Distil off 20 fl. oz. and reduce the distillate to the proper strength by the appropriate tests. The object of using sand in the retort is to prevent the thumping, which is always a source of great trouble during the latter part of the distillation.—*Proceed. Amer. Pharm. Assoc.*, 1866.

NOTES ON LIQUOR BISMUTHI.

BY GEORGE F. H. MARKOE.

Much has been written on the preparation of Liquor Bismuthi both in this country and in England, where it was introduced by Mr. Schacht. Mr. R. C. Tichborne was the first to make known the composition of the solution, in an able paper to the London Pharmaceutical Society, in which he proved the bismuth to be present in the form of an ammonio-citrate.

Mr. N. Gray Bartlett, in a paper published in the Jan., 1865, number of the Am. Journal of Pharmacy, gave an excellent working process for the making of citrate of bismuth and ammonia in scales, and also in solution.

The writer has used Mr. Bartlett's process many times, and always with good results, but considers the modifications suggested by Mr. A. E. Ebert, published in the *Am. Jour. Pharm.*, Jan., 1866, of much practical advantage, as it shortens the process, especially the washing of the citrate of bismuth on the filter, which is at best a tedious operation.

The writer has but one new point to suggest, and that is with regard to an improved method of assaying the bismuth solution. Sulphide of ammonium and sulphydric acid are the reagents usually employed in the assay of bismuth solutions and give very good results, but they both possess a most disgusting odor. The writer has found that sulphide of sodium, while it gives excellent results, equal in accuracy to those obtained by the use of the first named reagents, has the advantage of giving a denser and hence a more easily washed precipitate of ter-sulphide of bismuth. It has but little odor and can be used in the shop or laboratory without filling the atmosphere of the room with the smell of sulphuretted hydrogen. The point of saturation is readily determined, and the sulphide of bismuth formed is absolutely insoluble in an excess of the precipitant.

Sulphide of sodium may be prepared by the following formula :

Take of solution of soda three parts, and conduct sulphydric acid gas into the solution as long as it is absorbed, and when the saturation is complete add two more parts of solution of soda and keep the sulphide of sodium in well stopped bottles.

With a view to test the value of sulphide of sodium as a reagent a number of assays of commercial samples of liquor bismuthi were made. Both of the samples were of New York make, and are furnished to the trade in pound bottles.

No. 1. A colorless liquid with a sweet taste and the flavor of caraway, leaving an after-taste of metallic character. The specific gravity at 60° was 1.45. Four assays of this solution were made by precipitating the bismuth as ter-sulphide by means of an excess of sulphide of sodium, and the average results of these assays were eight and one-half grains of ter-sulphide of bismuth from each fluid-ounce, equal to seven and seven-tenths grains of ter-oxide of bismuth, or fifteen and four-tenths grains of ammonio-citrate of bismuth. This solution, then, is just what it purports

to be, as stated on the label, which claims that the solution contains sixteen grains; the deficiency of six-tenths of a grain in a fluid-ounce being so small that it may be referred to the loss consequent on the manipulation in making the assay.

No. 2. A colorless liquid, having an alcoholic odor and a specific gravity of .995; it was free from flavor and sugar, having only an alcoholic flavor, and the peculiar metallic after-taste of ammonio-citrate of bismuth. The average result of four assays was five and six-tenths grains of ter-sulphide of bismuth, equal to five and eight-hundredths grains of ter-oxide of bismuth, or ten and sixteen-hundredths grains of ammonio-citrate of bismuth. The label on the bottle of this liquor bismuthi states that each teaspoonful of the solution contained two grains of the ammonio-citrate of bismuth, which would be sixteen grains of the bismuth salt in each fluid-ounce. The quantity found was only 10.16 grains, showing a deficiency of about six grains in each fluid-ounce.

The writer has found the loss of citrate of bismuth in his practice to be about seven per cent., a quantity too small to pay for the time and trouble of regaining by the use of sulphuretted hydrogen, but by the use of sulphide of sodium it may be readily recovered; yet, unless the quantity is large, it will not pay. In working with twenty ounces of subcarbonate of bismuth it will require about six gallons of water to free the citrate of bismuth from the nitrate of potassa formed in the process, and in these washings the small portion of citrate of bismuth is found in a very dilute solution.—*Proceed. Amer. Pharm Assoc.*, 1866.

LIEBIG'S EXTRACT OF MEAT.

The following communication from Baron Liebig appears in the *Pharmaceutical Journal* for November:—

In the last number of your journal (October, p. 196), I find an excellent contribution from Messrs. Deane and Brady on "The Results of the Micro-Chemical Examination of Extract of Flesh."

I beg you will allow me to make a few remarks which may form a proper basis of judgment of extract of meat, and partic-

ularly South American, respecting its color, taste, and consistency.

You are probably aware of my having accepted the office of Director of the Scientific Department of Leibig's Extract of Meat Company (Limited), and on conditions calculated to offer to the public a complete guarantee of the genuineness and purity of the extract manufactured by that company.

One of my former assistants, Mr. Seekamp, is the manager of the chemical branch of the manufactory at Fray Bentos; another of my assistants, Dr. Ch. Finck, is acting at the general depot of the company. One manufactures the extract according to my special directions; the other receives it at Antwerp, and is bound to take a sample of each package, and to forward it to my laboratory at Munich for analysis. The packages are tin canisters of 36 to 45 lbs. each; the extract is sold only after being approved by myself. You will perceive thereby, that I control not only the manufacture according to my process of the extract at Fray Bentos, but also its quality when sold by "Liebig's Extract of Meat Company (Limited)," and I may safely assert, therefore, that the Fray Bentos extract does not contain any gelatine, or any thing that can be considered as such.

Gelatine does not belong to the composition of extract of meat, and must, therefore, be excluded as much as possible; it gives more consistency to the extract, and allows, to the detriment of buyers, of a larger percentage of water, and makes it liable to turn mouldy. But the action of tannic acid, as a reagent, might lead to erroneous conclusions, against which it is necessary to guard.

In my little work "On the Chemistry of Food" (Taylor and Walton, London, 1847), I say, p. 141: "The portion of the juice of the flesh which is soluble in cold water, but not in alcohol, is precipitated by tannic acid; the precipitate softens like plaster in hot water, and cannot be distinguished from the tannate of gelatine, but it differs from the gelatine by that characteristic property of both, that it does not gelatinize when concentrated." Extract of meat, then, may and does precipitate with tannic acid, even when entirely free from gelatine.

By the exclusion of gelatine, the yield in extract is naturally

diminished. According to a recent communication received from Mr. Seekamp, 34 lbs. of fresh lean meat yielded only 1 lb of extract as manufactured at Fray Bentos (corresponding with 45 to 48 lbs of butchers' meat, inclusive of fat and bones).

It has been observed that the color and taste of the Fray Bentos extract vary; this is owing to the difference of sex and age of the animals.

The meat of oxen always yields an extract of darker color and stronger flavor, reminding somewhat of the flavor of fresh venison, pleasant when diluted; the extract of cows' meat is of lighter color, and a mild flavor, and is preferred by many persons. The meat of animals under four years old cannot be used for the manufacture of the extract; it yields a pappy extract of weak taste, like veal, and without flavor.

According to the predominance of ox or cows' meat, the color and taste of extract varies, which is by no means a fault of the manufacturing process, as is fully explained by the preceding remarks. The extract of ox meat is, however, richer in creatinine and sarkin than cows' meat extract.

The extract received from Munich, and examined by Messrs. Deane and Brady, was cows' meat extract—the Bavarian Pharmacopœia prescribing the use of cows' meat, and not of ox meat.

These gentlemen observed that they never experimented on a sample which they had any reason to believe to be adulterated with chloride of sodium (common salt). My experience has taught me that such falsification, more especially by retail dealers, is by no means a rare occurrence, and it is even practised by manufacturers.

I hold a sample of extract, manufactured by Dr. Tenner, of Darmstadt, containing 9 per cent. of common salt, and, besides, 26 per cent. of water more than the Fray Bentos extract. He sells it in jars, with the labels stating that the extract is prepared "according to Liebig's process."

It is extremely difficult, as regards extracts of meat, the genuineness and purity of which are not discoverable by the eye, to protect the public against fraud; all manufacturers prepare their extract according to what they call "Liebig's process;"

but since I have given only general, and not special, directions for manufacture, it so happens that every one fills in the details after his own fashion, and the consequence is that not one of these extracts is, in its composition, like another.

There exists only two special directions for the manufacture of extract of meat, the one in the Bavarian Pharmacopœia, the other in the Pharmacopœia Germanica, but these directions are not mine.—*London Phar. Jour. Nov. 1866.*

Munich, Oct. 22.

LIEBIG'S EXTRACT OF MEAT. REMARKS ON THE FORE-GOING.

To the Editor of the Pharmaceutical Journal.

Sir,—The drift of Baron Liebig's letter in your last number will scarcely, we think, be intelligible to those of your readers who are not aware of what has been taking place in connexion with Extract of Meat; and we therefore deem it well to draw attention to some remarkable statements which that letter contains.

Baron Liebig tells us at the outset, that he has accepted the office of Director of the Scientific Department of Liebig's Extract of Meat Company Limited, and "on conditions calculated to offer to the public a complete guarantee of the genuineness and purity of the Extract manufactured by that Company." He further adds that he not only controls the manufacture in South America, but also, its quality when sold in Europe.

This is highly plausible: it is something like saying—"If you wish to have Extract that is genuine, buy it of the Company of which I am Director." But Baron Liebig goes on a step further:

"It is extremely difficult," says he, "as regards extracts of meat, the genuineness and purity of which is not discoverable by the eye, to protect the public against fraud; all manufacturers prepare their extract according to what they call 'Liebig's process;' but since I have given only general and not special directions for manufacture, it so happens that every one fills in the details after his own fashion, and the consequence is

that not one of these extracts is, in its composition, like another. There exists only *two special directions* for the manufacture of extract of meat, the one in the Bavarian Pharmacopœia, the other in the Pharmacopœia Germanica, but these directions are not mine."

Thus Baron Liebig not only claims to control the manufacture and quality of the Extract to which he refers, but implies that there is some secret essential to the process, suppressed in his published directions, but now imparted to the agents of the Company with which he has connected himself, and the formation of which was registered Dec. 4th, 1865. How far the spirit of this statement accords with what Baron Liebig published before the Company existed, we will leave others to judge from the following extracts:

"Since my experiments on meat in the year 1847 (*Annalen d. Chemie u. Pharmacie*, Bd. 62), I have constantly endeavored to promote the manufacture of Extract of Meat after the method I have described, in countries where beef has a lower price than with us.

Since the introduction into the Bavarian Pharmacopœia of this Extract of Meat (which must not be confounded with the so-called *Consommé* or *Bouillon tablets*), it has proved of great efficacy in cases of impaired power of assimilating food, etc.

* * * * *

The introduction into Europe of Extract of Meat at half or one-third the present price, from countries where meat has almost no value, would be regarded as a real blessing to the population of Europe. I had directed the attention very earnestly to the manufacture of Extract of Meat in Podolia, Buenos Ayres and Australia, and was always ready to make known the method of preparation to persons who showed themselves disposed to become acquainted with it, and to assist them with my advice."*

These sentiments are worthy of a scientific man occupying the eminent position of Baron Liebig, and such as were to be expected of one so placed, and we have reason to believe that prior to the

Translated from the *Annalen der Chemie und Pharmacie*, Bd. 133, (1865) p. 127.

formation of the Company with which he has become associated, Baron Liebig acted in entire accordance with them, for we find that under date 6 Oct., 1865, he thus wrote to Mr. Tooth of Sydney, who had shortly before had personal communication with him in Germany, and who was at that time engaged on some experiments on extract of meat in London :

"* * * * * Allow me to tell you that you need not trouble yourself with finding out a new method, or a simpler one, for the preparation of the Extract of Meat ; all this has been done a hundred times. There is only one method for manufacturing, —and this is to mix the chopped flesh with its volume of soft water (without gypsum), and to raise the temperature of that mixture to 180° F. To extract the essence with cold water is not applicable to manufacturing.

The South American Extract does not contain gelatine (or glue); it is precipitated by tannic acid, but this precipitate is not due to gelatine."

With regard to the special directions for *Extractum Carnis*, contained in the Bavarian Pharmacopœia (1856), which Baron Liebig says *are not his*, it is difficult to imagine that the words that we have put in Italics in the second paragraph of the foregoing translation, were written with a consciousness that the directions in question were so far defective or different as not to yield "this extract," of which he is there writing. But be that as it may, it must at least be presumed that they had the sanction of his coadjutor Dr. Pettenkofer, who was a member of the committee responsible for the processes prescribed in that work.

Whatever Baron Liebig may mean by "*Special directions*," it is plain that *all needful directions* have long ago been fully made public. *Special directions* will be modified by special circumstances, such (among others) as the quantity of material to be operated upon, the nature of the apparatus employed, the climate of the country where the process is carried on, and other matters not involving any general principle;—and all extract of meat, fairly and intelligently manufactured according to Liebig's process is *cateris paribus* identical, and may therefore, in our opinion, be properly designated *Liebig's Extract of Meat*.

Baron Liebig's present attempt to sell an exclusive right to

the use of a discovery which he had long ago given to the public, appears to be exactly parallel to a certain transaction *twenty years ago*, which called forth from the Editor of the Pharmaceutical Journal the following remark :

“Baron Liebig had an undoubted right to give the benefit of his discovery to whom he pleased ; but having given it to the public, he could not make it private property afterwards.”—*Pharm. Jour.* Oct. 1846, page 163.

We are, Sir,

Your obedient servants,

ALLEN AND HANBURY.

Plough Court, Lombard St., 9 Nov., 1866.

—*London. Pharm. Jour.* Nov. 1866.

GLYCERIN.

By JOSEPH ADOLPHUS, M. D., of Hastings, Michigan.

In writing this article, I am aware that but few are ready to receive the facts herein stated, inasmuch as glycerine has merely been regarded as a matter of but secondary import. It must not be considered out of place when I observe that glycerine stands next to cod oil as a restorative agent, *especially in the cases of children's complaints*. *What cod oil is to the adult, glycerine is to children* ; at least, in a great measure. The clinical facts below recorded are from my own practice. I am altogether strongly inclined to the restorative doctrine, because I have reaped the richest harvest of curative success for practising it. Furthermore, I am not a firm believer in the doctrine, that the blood is the chief and only source of nutrition, repair, and reconstruction. However, I shall not digress further from my subject, but shall at some future period disclose my views on the latter subject.

Though glycerine has been before the profession for many years, I am not aware that that attention has been paid to this important remedial agent that its merits deserve.

Its excipient properties excel all other known solvents, because of its universality. Thus 100 parts of glycerine will dissolve

Acidum arsenicum,	20.0	Brucia,	2.25
" arseniosum,	20.0	Alum,	40.0
" boracic,	10.0	Arsenite soda,	50.0
" benzoic,	10.0	" potass.,	50.0
" tartaric,	30.0	Carb. soda,	99.0
" citric,	30.0	Carb. ammon.,	20.0
" tannic,	50.0	Chlor. potass.,	3.5
" oxalic,	15.0	Chloride sodium,	20.0
Argenti nitrat.,	100.0	" barium,	10.0
Bromine,	100.0	" zinc,	50.0
Iodide of iron,	100.0	Borate soda,	60.0
Chloride of iron,	100.0	Phosphorus,	0.3
Monosulph. potass.,	100.0	Persulphuret potass.,	25.0
Hydrarg. biniodide,	0.3	Muriate ammon.,	20.0
" bi-chlor.,	7.0	Sulphur,	0.3
" cyanid.,	27.0	Sulphate iron,	25.0
Iodine,	1.0	" zinc,	36.0
Iodide of sulphur,	1.6	" copper,	40.0
" potassa,	25.0	Mono-sulphuret soda,	100.0
" zinc,	50.0	" " lime,	100.0
Cyanide of potass.,	32.0	Muriate morphia,	20.0
Quinia,	0.5	Acetate "	20.0
Strychnia,	0.25	Sulphate "	20.0
Morphia,	0.45	Sulph. atropia,	33.0
Veratria,	1.0	" strychnia,	22.5
Cinchonia,	1.5	Carb. of iron,	60.5
Sulph. quinia,	2.75	Oxide of lead,	20.0
Atropia,	3.0	Salicine,	40.0
Nitrate strychnia,	4.0	Santonine,	35.0

All the deliquescent salts and vegetable acids are soluble in it to a great extent.

Chemically, glycerine is a compound of a radical known as *glyceryl*, having a formula of C_3H_7 , in union with 5 eqs. of O, and one of water; its formula is, therefore, $C_3H_7O_5 + HO$.

When pure, its specific gravity is 1.26, and contains 98 per cent. of anhydrous glycerine. When exposed to the air, it absorbs one-half its weight in water. It never absorbs oxygen, hence it never becomes rancid, when originally pure. It is not soluble in fatty acids.

When perfectly pure, glycerin is of a thick syrupy consistence, very nearly colorless, and without odor, and of a sharp sweet taste. Alone, it is not susceptible of fermentation. It is solu-

ble in all proportions in water and alcohol, but not in ether or chloroform. Pure glycerine evinces no reaction with litmus or other test-agents.

It is perfectly neutral and bland, and has the capacity of diffusing itself freely over and through organic matter, incorporating itself between organic molecules, by which it is absorbed and appropriated. All organic substances, from the hardest bone to the finest connective tissue, are penetrated by it, with such diffusive force as to make their minute structure astonishingly transparent. The blood and pus globules, when suspended in glycerine, become quite transparent, and show up their nuclei readily, their cell-walls becoming more thin and transparent, and finally dissolved. Epithelial structure is admirably delineated by its agency; so are the fasciculi of striped muscular fibre. Thin sections of bone, soaked in it, reveal in admirable style its corpuscles. All organic substances, soaked in glycerine, are thoroughly preserved, both as to form, integrity, and softness.

Applied externally to burnt surfaces, mixed with subnit. bismuth, it forms the very best application I have ever used for children or adults. One part starch (Bermuda arrowroot is best) and five of glycerine, heated up to 190° F., being constantly stirred, makes the most agreeable basis by which to apply nit. silver and other salts to the eye, ear, and skin. When spread over dried organic membrane, it diffuses itself rapidly over it, and is speedily absorbed into its intimate structure. This property of glycerine depends doubtless on the affinity that it possesses for organic molecules, penetrating to them and becoming a nutrient plasma to living tissue. When applied to false membranes, it diffuses itself between them and the morphological tissue beneath, causing their speedy detachment.

Thus in diphtheria I have repeatedly applied it with a brush, either alone or with tannin dissolved in it, to the false membranes, which would be detached in a few hours. So, also, in croup. The surfaces being so modified as in a great measure to cease to reproduce them. Burnt and blistered surfaces often produce false membranes, which induce severe constitutional symptoms, in consequence of the irritability of the surfaces. Glycerine and morphia speedily remedy them, soothing the nervous irrita-

tion, and modifying the vital condition of the parts. Applied to suppurating surfaces which are painful and produce an ichorous pus, glycerine-dressings change the abnormal condition by arresting the degenerating process, through its antiseptic and astringent properties. Applied to enlarged glands, and injected into abscesses, it meets every indication, either alone or with iodine, etc., dissolved in it. I have injected it into syphilitic buboes, bringing about a healthy state of their walls, and healing of their interior. I have used it as an application to the os uteri in ulcerations, indurations, and chronic inflammations of that organ, conjoined with iodine, or iod. potass., or morphine acet., or tannin, just as appearances seemed to require, with most excellent effects. Applied to large cervical glands in scrofulous children, with iodine, it dissipates them far more speedily than when the iodine is otherwise applied. Malignant ulcerations, touched with the following caustic are better remedied than when otherwise treated.

R. Iodine,

Iod. potass., aa ʒss.

Glycerine, f. ʒviij. M.

When diluted with a larger portion of glycerine, and applied to carbuncles, buboes, and furuncles, in their formative stages, it will dissipate them altogether or modify them. Painted over abscesses of different types, it either causes the absorption of their contents, or checks in a measure their progress. Injected into the rectum in diarrhoea and dysentery, diluted with starch, it soothes the irritated mucous membrane in a remarkable manner, and will often alone bring about a cure.

But it is its internal usefulness in the treatment of children's diseases of low, cachectic, strumous, asthenic conditions, that glycerine displays its great superiority. I have repeatedly witnessed its capacity to fatten children. Thus: 1st. An infant six months old, recovering from a severe diarrhoea, kept quite emaciated and pale. Glycerine was ordered for it, and in a few days a change was remarked in its appearance for the better, and in four weeks it weighed eight pounds heavier. 2. A child, sixteen months old, had its head covered with one continuous scab—porrigo. This was a family complaint, and resisted all

manner of treatment for a very long time in all the other children. In the above case I resorted to glycerine, both internally and externally. A cure was effected in three months. 3. A girl, seven years old, recovering from rubeola, retained her cough, emaciation, and nervous irritability. Dulness over apex of left lung; roughened breathing. No doubt the case was chronic pneumonia. Glycerine, as a last resort, was ordered in teaspoonful doses in water, three times a day. Recovery in six weeks. 4. A strumous boy, much emaciated, had hacking cough and night-sweats. Pulse frequent. Sleep disturbed. Abdomen tumid and enlarged. Cervical glands swollen. Bowels irregular. Fecal discharges clay-colored. His case was such, that no one expected any more than a partial palliation. After other treatments had failed, I ordered glycerine in teaspoonful doses, in which were dissolved four grains of ferri ammon. cit., and one-half a grain of quinia, four times a day. This he continued for a year, and was in remarkably good health three years after.

Cod oil, quinia, and iron had failed in his case when the glycerine was commenced.

I always administer glycerine to children convalescing from typhus and typhoid fever, and find it to contribute so remarkably to their recovery and restoration, as to be observed by the non-professional. In cholera infantum I hardly ever fail to use glycerine, both as enemas and per orum. The great mortality of this complaint makes it well worth the attention of medical men, to any form of treatment that will tend to rob it of its fatality. The peculiar condition of the epithelium of the bowels, the great inanition and prostration, the nervous depression and exhaustion; all depending on the pathological condition of the mucous membrane of the small intestines, engendering an erythematous condition of the epithelial surface, and often resulting in shock to the nervous centers; and hurrying on death at an early period. Glycerine, from its affinity for molecular tissue, spreads over the surface of the intestinal membrane, supplies the deranged tissues with a plasmatic element of repair, as well as by its mechanical and endosmotic powers, on living tissue, changes the local life forces, and endows them with renewed vital capacity. This is not fancy. Observe its action on the inflamed

skin, and we shall soon be satisfied of the justice of the above remarks. Glycerine rubbed on the abdomen also gives it to the exhausted tissues in another manner. All I ask is its trial in infantile diarrhoeas with judgment.

It forms an excellent adjunct to cod oil, in proportion of equal quantities. Quinia dissolved in it seems to act more rapidly, kindly, and with greater certainty, often entirely overcoming idiosyncracies. Thus an infant, on whom quinia exercised a very severe effect, could take it dissolved in glycerine with perfect safety. It adds to the efficacy of iron. Thus a boy twelve years old had made a bad recovery from a bilious remittent fever. He was pale and feeble, nervous system irritable; anorexia was a marked symptom. Iron, cod oil, and tonics failed on him. He was then put upon glycerine f. 3j. and tr. ferri. chlor. gtt. viij. three times a day. His recovery was rapid and permanent.

A girl, æt 14, was treated for irritative dyspepsia for nine months, without any material improvement, when glycerine was ordered in teaspoonful doses, four times a day, with excellent results, and a final cure. Many grown people are greatly benefited by uniting cod oil and glycerine in equal proportions, and I have always found that children do better, while taking cod oil, to have some proportion of glycerine added to it.

Furthermore, I cannot close without observing that old and irritable ulcers are most excellently treated with glycerine holding acetate of morphia in solution. That burnt surfaces are relieved of pain in proportion as the glycerine penetrates to the sound tissue beneath. When stumps suppurate, and the pus burrows into the sound tissue, pure glycerine arrests the process, and brings on a healthier condition of the parts. In a case of psoas abscess, glycerine diluted with its bulk of water was injected into it twice a day, and was gradually made stronger, till a cure was effected.

Glycerine is well worthy of our attention, I prefer BROWN's glycerine.—*The Med. and Surg. Rep.*, Phila., Jan., 12, 1867.

THE BORAX LAKE AND SULPHUR BANKS IN NAPA VALLEY, CALIFORNIA.

CALISTOGA SPRINGS, NAPA VALLEY, CAL., Oct., 1866.

The Napa Valley, in California, is about forty miles long from north to south, and averages nearly two miles in breadth. For the most part, the valley is as umbrageous now as before its cultivation; the beautiful oaks with which it was studded still remaining. The first settlers of California had not before them dense forests nor treeless plains; but a country which, when viewed from the mountains, presents the appearance of an English park.

At the entrance to the valley is a soda spring, the waters of which are bottled and used throughout the country. In the middle, among sequestered and woody hills, there are the White Sulphur Springs, with a hotel and cottages, to which many invalids resort with advantage; and here, in the upper part of the valley, are hot and sulphur springs. This is Calistoga—a fancy name for a place which will become magnificent. Mr. Brannan, its public spirited proprietor, a pioneer among the pioneers of the State, has expended a fabulous sum in planting trees over the shallow, heated soil, beneath which boiling water flows in every direction, some of its streams being highly charged with sulphur. Success is rewarding his efforts, and all that is needed to make Calistoga a Saratoga—shady walks—is being accomplished. Stages leave Calistoga daily for the geysers, which I have just visited.

MOUNT ST. HELENA.

Before beginning the ascent of Mount St. Helena, which bounds this valley on the east, you pass a depot of borax and sulphur, where those commodities, after being transported across the mountains in teams of six mules, carrying six tons, are transferred into teams carrying ten tons, drawn by eight mules, to the railway for shipment in steamers to San Francisco. The excellent road, just completed, which is carried on the steep acclivities of the mountains, by the side of precipices a thousand feet deep in some places, has been constructed purposely for the conveyance of those valuable minerals. Mount St. Helena,

whose peak is one of the loftiest of the coast range, having an altitude of three thousand six hundred feet, has been pressed by the feet of the illustrious Humboldt, who left a monumental inscription there which some barbarian—not a Digger Indian—has removed.

VALUABLE SPRINGS.

The most remarkable feature of the country in Cayote Valley is a hill of ochre, through which a creek makes its way. On arriving at Lower (Clear) Lake there was a sufficient time for a visit to Sigler's Springs, which lie seven miles distant on the same mountains as the geysers, though on the opposite or western side. The picturesque and secluded valley in which these, the most valuable of the springs of California, are found, has the advantage of being well watered, and, unlike any other portion of the State, is in perpetual verdure. Besides a natural fountain, whose waters cannot be distinguished from Congress water, there are hot sulphur and ferruginous baths supplied by springs whose supply is illimitable. A rude edifice, serving as a rudimentary hotel, has been erected by the proprietor, who personifies Galen and Boniface, and very well too, all things considered. Mounds of tuffa, enormous masses of trachyte and serpentine, with veins of cinnabar, in this hitherto unexplored valley, invite a visit from geologists. Were this place not so difficult of access, it would be thronged with visitors from all parts of the Pacific States.

BORAX LAKE.

Returning to the lower part of Clear Lake—a magnificent sheet of water twenty miles long and from two to ten in breadth—we resumed our journey to its objective point, Borax Lake; not, however, until we had first seen evidence of the volcanic character of the country by traversing hills covered with obsidian, and by having a glance at springs from which carburetted hydrogen issues in quantities sufficient for illuminating purposes, if wanted.

Borax Lake is about one hundred miles north of San Francisco. Properly speaking, it is a pond, being only one mile long and half a mile wide. It is situated on a peninsula which juts into Clear Lake, from which it is separated by a mountain. It

is, in brief, a crater of an extinct volcano, or at least presenting that appearance. That my reader may duly appreciate the rarity of the curiosity before him, I would remind him that probably no white man ever saw its like—there being no other of the kind save in Thibet. Before the discovery of Borax Lake in California, there were but two sources of supply of borax to meet the demand of the world:—that of Thibet, and that of a firm in Liverpool who manufacture the article by a chemical process.*

Iron coffer dams, having chambers about five feet square, are sunk in the lake; the water is bailed out of the dams, the mud in them being pressed by men stamping on boards that cover it, and the concrete mass taken ashore and dried in the sun, the largest borax crystals being picked up during this operation. Crystals are found from the size of a hen's egg to that of a pea. The earth is strongly impregnated with borate of soda—biboate, strictly speaking—is subjected to lixiviation, and the saturated water is slowly evaporated in heated boilers until the octahedral crystals are formed. In the sediment are iodine, silicic acid, silicate of lime and alumina; the first is likely to prove valuable. At the present time about four thousand pounds of borax is obtained daily; ten to fifteen tons will be the daily yield on the completion of the works. The supply may be regarded as illimitable, and sufficient for the demands of the world. It is constantly forming, and soon there will be no borax in use in the arts and in medicine save that which the Golden State will furnish.

SULPHUR BANKS.

A hill about six hundred feet high separates Borax Lake from the sulphur banks. The view from the pass over that hill is one of surprising beauty and grandeur. A lofty mountain, the Uncle Sam, in front, sections of Clear Lake, like two silvery arms embracing the borax peninsula, and the tiny mineral lake itself reflecting the landscape more distinctly than could a metallic mirror, are but a few of the attractions of this charming spot. There is no human habitation in sight save the works of the Bo-

* The author forgets the lagoons of Tuscany.—Ed.

rax Company, but cattle are browsing on the salt meadows adjacent to the lake, and on its borders are swine feasting on the larvæ of a fly, which is found on the margin, forming an organized belt a yard or more wide, and about a foot in depth. The only other inhabitant of those waters is a leech. It is hardly necessary to add that the specific gravity of the lake renders it impossible that a man should be drowned in its healing waters—healing the ulcers of animals that are driven in for that purpose.

The sulphur banks are on the margin of Clear Lake; an extensive deposit—the deposition being still in progress. Extensive works for sublimating the element have been just completed. Sulphur is poured out from retorts in constant streams into boxes holding two hundred pounds each, affording to the borax company, at a trifling expense, a daily supply of a hundred such boxes, if they see fit to draw on their brimstone bank to that extent.

SODA.

Here we may have an insight into one section of Nature's laboratory. Would you learn how bicarbonate of soda is formed in Borax Lake? Scoop out of this pool some of its water, which is charged with carbonic gas; first quaff some of the delectable fluid, and pour it into yonder pool of boracic acid—a pleasant palatable liquid—and mark the effervescence! The brisk action now going on is due to the fact that boracic acid has a strong appetite for soda, while carbonic acid is only too ready to get rid of that alkali; two portions of boracic acid seize the forsaken soda and form borax, while divorced carbonic acid bubbles up as if rejoicing in its emancipation. That is what causes the commotion in the pool, and that is precisely the operation which is taking place in Borax Lake.

CRYSTALS.

Walk into one of the trenches that have been dug in the bank of sulphur, and you may watch the formation of beautiful circular crystals of sulphur from the condensation of the stifling vapors around you. These crystals fill little crevices, wherein you will discover cinnabar and opal. You are admonished not

to stoop, for the carcasses of hares and pigeons indicate that streams of carbonic acid are flowing in this trench; and, indeed, turn where you will, you are well-nigh overpowered by sensations as if naught but mephitic vapors could be inhaled in this desolate little bog. The desolation is, however, circumscribed, for beyond the limited sulphur area there is luxuriant vegetation, from the beautiful campana which marks the spots where boracic acid mixes with the waters of Clear Lake to the pine-clad summits of the mountains. The ever-present oak (*Quercus Nindsii*), the Madrona (*Auburtus Menziesii*), the Manzanita (*Arctostaphylos glauca*), and other California forest trees, form a grove hard by, among which I recognized, as a sort of old acquaintance, the California nutmeg, that graceful evergreen bearing the honored name of one of my preceptors.—*The Torreya California*.

QUICKSILVER.

The borax and sulphur works are the property of one company, which has been so fortunate as to secure the services of Professor Oxley, an English chemist, to whom is due the credit of developing these mineral resources of Clear Lake. It is not unlikely that quicksilver will yet be found a paying article in this neighborhood. Already California quicksilver has driven out of the Chinese, Chilean, Peruvian, Mexican and our own market the quicksilver of Spain, and the indications are that innumerable mines remain to be discovered.

LABOR.

But for Chinese labor neither borax nor sulphur could be obtained. White laborers could not be induced to undertake the labor. However, as Chinamen get what they consider good wages, the needful supply is always on hand. Professor Oxley's experiences in mining are highly suggestive as to man's need of a Sabbath. He says he has seen, at Washoe, enough of working seven days in a week on seven days' wages to demonstrate that only five days' product is the result; and although his Chinese laborers are engaged by the month, and are quite willing to work every day in the month, he, for pure

economical and physiological considerations, gives them a seventh day rest,—the Christian Sabbath.

D. J. MACGOWAN.

—*Journ. Applied Chemistry*, Jan., 1867.

THE QUININE DISTRICTS OF THE ANDES.

The official report on the efforts of the Indian Government to introduce the quinine plant in the mountainous regions of India, to which we drew attention in a previous number, contains also a very interesting account of the culture, climate, and habitat of the cinchona plant of South America. Mr. C. R. Markham of the India Office, in a memorandum which he submitted to the Indian Government, stated that he considered it to be very important that seeds of the species which grow in New Granada, being hardy, and yielding a large percentage of quinine, should be obtained for propagation in India; and the Secretary of State made arrangements with Mr. Cross for this purpose. That gentleman accordingly made a tour of the Andes, and passed through districts which had not been previously explored, for it appears that even Humboldt, who visited Popayan, did not penetrate many of the forests which were visited in this search for seed. The official notice of the work performed states that Mr. Cross had to face dangers and hardships of no ordinary kind, which proved fatal to the object of his first mission, as the seeds he had collected were destroyed; but a renewed visit, made at the instance of the India Office, was more successful. At the time of receiving his instructions, Mr. Cross was residing near the Red Bark Forests, on a high table-land on the western slopes of Chimboraza, at an elevation of 10,000 feet above the level of the sea, and from this district he commenced his ascent of the northern shoulder of the Chimboraza, and reached the highest part of the pass, which has an elevation of nearly 15,000 feet. After passing through districts where barley and potatoes were cultivated, he came upon an edible species of *Oxalis*, and then reached immense tracts of land covered by a species of *Stipa*, which with genti-

ans, *Chuquiragua insignis*, and other plants of the order *Compositæ*, ran up to the very verge of perpetual snow. Passing along a road, hedged on each side by monstrous specimens of *Agave Americana*, he came to the snow-covered cone of the volcano Cotopaxi, from which a perpetual rumbling noise is heard, and which sends up flame to a height of 1,000 feet above the summit of the crater. Our traveller next passed the borders of the Laguna de San Pablo, which was surrounded by tumuli, some of which were of the extraordinary height of 400 feet, and thence to the plain of Tuquerres, which, at a height of 10,500 feet, produces a *Barnadesia* with white flowers, and where a dwarf species of gentian was in full bloom, covering the ground as thickly as daisies do in a pasture field in England. At Pasta he came to a district which has a wild temperature, being surrounded by forest-covered mountains, where a species of *Cinchona* is cultivated, chiefly for export to the United States. Pasta is also a market for vegetable dyes, which are brought there by the Indians. There was much cinchona bark stored up at this place, and also in sheds in the forests; but as its yield of quinine was small, it did not sell readily. The bark had a yellow or orange color, and in the fracture was coarse and fibrous. Mr. Cross describes the tree producing it as the *Cinchona lancifolia* of Karsten, being of great size, with large lanceolate coriaceous leaves and bark, covered with silvery epidermis. After passing through a series of adventures of no ordinary kind, Mr. Cross arrived at the city of Popayan, which lies between two volcanoes, at nearly 6,000 feet above the sea. He next reached Sylvia, the head-quarters of those who buy the bark of Pitayo, Hambola, Tortoro, and Purrace. Passing on to Pitayo, some choice plants were discovered, and here Mr. Cross selected seed from trees about fifteen feet high. He remarks that the color and depth of the soil varied from light brown to nearly black, and was from three inches to three feet in depth. In all situations the vigor of the cinchona plant appeared the same, but it was restricted to the dry slopes, and was never found on wet ground. After drying the capsules, he occupied himself in taking the temperature of the region, and he found that at the lowest limit of

the cinchona it rose during the hottest days to 59° or 60° , but at night fell to 46° or 48° , and at certain periods below freezing point; at the upper limit, the temperature ranged during the day from 40° to 48° , and at night fell to 35° or 36° . Hence it would appear that in dry situations it favors the plant to have an occasional fall in the temperature of three or four degrees below freezing point, and a daily range of from eight to twelve degrees.

The general vegetation of this region consisted of pipers, solanums, brugmanzias, fuchsias, smilax, etc. The winds, which in summer are often violent, do not appear to affect the cinchona, but the forests are very rarely enveloped in mist. It appears to be a delusion, therefore, on the part of those persons who assert that torrents of rain and mist are necessary for its growth. Mr. Cross states that "he had been in localities in the Andes which had altitudes similar to that of the cold cinchona region, where only a species of *Solanum* would grow, and which looked as if on the point of extinction, from the abundance of mosses which twined round the smallest shoots to the points. No cinchona could live in such a climate, a certain amount of dry weather being necessary for ripening the capsules." It appears that all the bark taken from Pitayo is sent to France, and that the bark sold in England under that name is not true Pitayo bark, but comes from the mountains which border on the valley of Magdalena, from Almaquer and Pasto. Mr. Cross states that the spurious Pitayo bark of the English market is from the *C. lancifolia* of Karsten, and is very inferior in quality to that of "Pitayo, the latter being not much thicker than window-glass, being taken from small plants; the large trees having been destroyed long ago." Mr. Cross then continued his journey to the great valley of the Magdalena, the town of Neyva being the principal emporium for the bark of the district; and thence he returned to Paramo, having accomplished a difficult and interesting journey, during which he collected a vast amount of information, which cannot fail to be of great practical importance to cultivators of this valuable plant. Viewed merely as a geographical exploration, this journey over a considerable portion of the Andes cannot fail to

attract the attention of scientific men, and Mr. Cross's remarks on the vegetable productions of this vast region must interest botanists and chemists. Mr. Clements R. Markham, in his official memorandum, states that "Mr. Cross deserves great credit for the skilful and energetic way in which he performed this difficult service." It appears that a portion of the seed obtained has been supplied to the Mexican Government, who are anxious to cultivate the cinchona plant.—*London Chemist and Druggist*, Dec. 15, 1866.

NOTE ON THE CRYSTALLIZATION OF GLYCERIN.

BY WILLIAM CROOKES, F.R.S.

My attention has been drawn by my friend Dr. W. S. Squire, of the firm of Burgoyne, Burbidges and Squire, Coleman Street, to the hitherto unobserved fact of the crystallization of large masses of glycerin during the recent cold weather.

About five tons of glycerin, in casks of eight cwt. each, were recently imported by this firm from Germany. When they left the factory the contents were in their usual state of viscid fluidity; but, on arriving in London, they were found to have solidified to a solid mass of crystals, so hard that it required a hammer and chisel to break it up.

A large block of this solid glycerin, weighing several hundred-weight, suspended in a somewhat warm room, took two or three days to liquify, and a thermometer inserted in the fusing mass indicated a constant temperature of 45° F. In small quantities the crystals rapidly fuse when the bottle containing them is placed in warm water. The original glycerin was pale brown; the crystals formed from it are nearly white, whilst the liquid which drains away from it is dark brown. In quantity, the solid glycerin looks very like a mass of sugar candy. The isolated crystals are sometimes as large as a small pea; they are brilliant, and highly refracting; when rubbed between the fingers they are very hard, and they grate between the teeth. Their form appears to be octahedral, but this is difficult to ascertain accurately, owing to the viscosity of the mother liquor which adheres to them.

The crystals, separated as much as possible from the mother liquor, and then fused by heat, form a clear and nearly colorless liquid, slightly more viscid than usual, which, as far as I have been able to ascertain, possesses all the physical and chemical properties of pure glycerin. It is perfectly miscible with water and alcohol. It has been especially tested for sugar and glucose (common adulterants) with negative results: lead is also absent, and nitrate of silver only produces slight turbidity in its aqueous solution. I believe it to be almost chemically pure anhydrous glycerin.

Some of the fused crystals have been exposed for several hours to a temperature of 0° F. without solidification taking place. The only result was that the liquid became more viscid.

The cause of the crystallization is not very clear. The most probable explanation is that the vibration of the railway journey across Germany, added to the intense cold to which the glycerin was simultaneously subjected, enabled the particles to arrange themselves in a regular form. The phenomenon then becomes analogous to the crystallization of wrought iron under the influence of vibration, the gradual solidification of syrupy solutions of organic alkaloids, and the familiar crystallization of refractory platinum salts in a watchglass by judicious friction with a stirring rod. Experiments are about to be tried to see if the crystallization of glycerin can be determined by exposing it to a low temperature, and at the same time setting the particles in a state of vibration.

Should the above view of the cause of this curious phenomenon be correct, we may imagine that, during the railway transit, the vibratory movement was determining at the same time the crystallization of the glycerin and the railway axles, the rapidity of the action being in the inverse ratio of the viscosity of the two bodies.—*London Chem. News*, Jan. 18, 1867.

ON THE POISONOUS CHARACTER OF NITROGLYCERINE.

In the 'Hanoverian Journal for Practical Surgery and Medicine' (*Zeitschrift für praktische Heilkunde und Medicinalwesen*, heft i.) there is an article by Mr. B. Schuchardt on the injurious

effects of nitroglycerine upon men and animals. Among the higher animals he found that it acted chiefly on the brain, and in large doses caused death. In order to study its effect upon himself the author took one drop at 10 A. M.; five minutes after great giddiness came on, accompanied by weakness of sight, headache with throbbing in the temples, weariness, sleepiness, strong aromatic taste in the mouth, a burning feeling in the throat, and pain in the region of the heart. An hour later, whilst incautiously endeavouring to take some nitroglycerine out of a bottle by means of a tube, he received a considerable quantity in the throat. Although he spat it out at once, and rinsed out his mouth with alcohol, he felt the above-described symptoms return, so that he was obliged to go to bed. He then fell into a half-senseless condition, which lasted some hours, and left behind a violent throbbing headache, with sensitiveness to light, giddiness, and trembling in the whole body. At first a feeling of warmth spread over the whole system, and the pulse increased in speed; later a feeling of cold came over him; besides this there was a burning sensation in the region of the heart, and nausea, but no vomiting. On the following day every symptom of poisoning had disappeared. There was no sign at all of convulsions.

When applied externally, nitroglycerine produces no effect at all; to have any action it must be absorbed into the blood. This seems to show that its poisonous effects are due to the products of its own decomposition. Perhaps protoxide of nitrogen is set free in the blood. As the blasting oil has the property of penetrating through organic tissues in a very marked manner, it is easy to understand that workmen handling the material should get headaches by the absorption of it through the skin. As nitroglycerine is not volatile, no action through the lungs can take place.

As the excellence of nitroglycerine as a blasting material is sufficiently proved, it will not be long before it finds a wide application. Then will come the question whether its poisonous properties are not so considerable as to forbid its employment. The author of the article referred to believes, from his researches, that this is not the case. Experiments on animals have shown that, to cause death, comparatively large doses are necessary.

It is true that upon man small quantities produce decided symptoms of poisoning, but, even after a somewhat large dose, these were not of such an alarming character as to cause any apprehension of a fatal termination. The author got about a hundred drops in his mouth and swallowed at least ten. Violent symptoms of poisoning came on, but not such as to cause anxiety about his life. In the arts and manufactures far more dangerous poisons are employed, such as phosphorus, cyanide of potassium, and corrosive sublimate. However, in consideration of the injuriousness of nitroglycerine, some precautionary regulations for its manufacture and sale should (in the author's opinion) be adopted. Besides this, the workmen should be taught the dangerous nature of the blasting oil, in order to prevent their injuring themselves by carelessness in handling it. If these means were taken, it is thought that nitroglycerine would scarcely be found more injurious than any of the other poisons used in the arts and manufactures.—*London Pharm. Journ.*, July, 1866.

ON THE PREPARATION OF PURE SILVER.*

BY PROFESSOR J. S. STAS.

I have had recourse to two distinct methods to procure the pure silver necessary for the different purposes treated of in my investigations.

First Method.—To carry out the first method, I dissolved at the boiling point 3500 grammes of French silver coin in very dilute nitric acid. The nitrate of silver produced, after having been evaporated to dryness and fused, was kept at its point of fusion as long as oxygen compounds of nitrogen were given off. The nitrate mixed with nitrite was dissolved when cool in the smallest possible quantity of cold water, and the solution, after resting forty-eight hours, was filtered through a double filter to separate all the matter that might have remained in suspension. The limp solution, diluted with thirty times its volume of filtered rain-water, was precipitated by an excess of pure hydrochloric acid. The chloride of silver formed was, when deposited, washed

* Abstract from *Memoirs of the Royal Belgian Academy*.

by decantation, first with water acidulated by hydrochloric acid, and then with pure water. This washing was performed by shaking the chloride violently each time in large stoppered bottles with the necessary quantity of liquid.

It was then spread upon a cloth that had been washed with hydrochloric acid, strongly compressed, and left to dry spontaneously. When perfectly dry it was finely powdered and digested for several days in aqua regia. It was then again washed in distilled water.

As the reduction by heat of chloride of silver with carbonate of sodium is a most delicate operation when performed upon large quantities, I made this reduction at a low temperature under the influence of a solution of caustic potash and sugar of milk, as first proposed by Level.

To procure potash and sugar of milk free from heavy metals, I added to a concentrated solution of hydrate of potassium, previously boiled, a slight excess of a solution of sulphhydrate of potassium to precipitate traces of dissolved metals. After the deposit of the metallic sulphides, I decanted the alkaline solution and put it in contact with freshly precipitated oxide of silver to deprive it of the sulphhydrate of potassium. After a sufficient digestion and rest, I separated the excess of oxide of silver and the sulphide of silver that had been produced.

By the same means I eliminated the heavy metals contained in an aqueous solution of sugar of milk.

The chloride of silver, distributed in three large porcelain jars, was digested at a temperature of from 70° to 80° C., with the mixture of solutions of hydrate of potassium and sugar of milk, until all the chlorine was separated from the silver. The metallic silver, which was grey, was washed with water until the excess of alkali had disappeared, then digested with dilute pure sulphuric acid, and lastly washed with ammoniacal water. After being dried, 5 per cent. of its weight of calcined borax was added, containing 10 per cent. of nitrate of sodium, and then, with the necessary precautions, it was fused in a "Paris crucible."

The fused metal was then poured into a mould coated with a paste of mixed calcined and non-calcined kaolin. The bars of silver, first cleaned with sharp sand, were then heated to red-

ness with caustic potash from tartar; the adhering kaolin having been dissolved, the bars were washed in pure water.

They were divided into small blocks by means of a chisel of tempered steel. As the hardest chisel leaves traces of iron on the surface of the silver, the small blocks were digested with warm hydrochloric acid, pure and concentrated. The silver was then washed with ammoniacal water, and lastly with water, and heated up to its fusing point before being placed into a well stoppered bottle.

I procured, *at a single casting*, 2875 grammes of silver of an extraordinary whiteness.

I will subsequently state how I assured myself of its state of purity; I wish first to describe the second method which I made use of to procure large quantities of pure silver.—*London Chem. News*, Jan. 18, 1867.

EXPERIMENTS ON THE COMPOSITION OF WHEAT GRAIN.

By A. H. CHURCH, M.A. OXON., F.C.S.

Professor of Chemistry in the Royal Agricultural College, Cirencester.

The influence of season, climate, manure, etc., upon the composition of wheat grain, has engaged the attention of many scientific observers. MM. Boussingault, J. Pierre, and Reiset, abroad, and Messrs. Lawes and Gilbert, in this country, have added several important facts to our knowledge of the variations in the yield and quantity of corn under different conditions of culture and atmospheric influence, and also according to the particular variety of seed grown. There were still several points to be cleared up, and it is to one among these that my attention has been more particularly directed since the autumn of 1863. It is the relation of the density of the seed to its chemical composition, and to its germinating and productive powers, that I have submitted to an experimental investigation. The first portion of my results has been already published,* and a brief account of those more recently obtained may prove of interest to the readers of the "Journal of Botany."

Most samples of dressed wheat-grain, if carefully examined,

* "Practice with Science," part i. p. 101. Longman, 1865.

will be found to consist partly of hard, horny, subtranslucent grains, partly of softer opaque floury grains, and partly of grains presenting a mixed aspect. I have specially examined two varieties of wheat, and the proportions of the three sorts of grain which my samples contain are given here in percentages :

	Spalding red wheat (1864.)	Hallett's white rough chaffed (1865.)
Translucent . . .	49 per cent.	24 per cent.
Medium . . .	34 “	31 “
Opaque . . .	17 “	45 “

These proportions fluctuate, however, even with the same variety of wheat under the various conditions of season, maturity, when cut, etc. It is not, however, these proportions that I wish to discuss, but a remarkable difference in composition between the translucent and the opaque grains. I am aware that previous observers have detected certain chemical differences between the poor shrivelled grains and the full plump grains. But the grains which I find to offer a most striking contrast as to the proportions of their most important constituent, present no striking contrast in size, shape, or weight. In Hallett's white wheat, for instance, the 24 translucent grains weigh 19 grs.; the 45 opaque grains weigh 34·2 grs. Had the opaque grains been of exactly the same density and size as the translucent grains, their weight would have been 35·6 grs. instead of 34·2—a very trifling difference, due not only to a difference in the size of the two sorts of seed, but to a slight difference in density in favor of the translucent grains. This difference in density is brought out very plainly when the seed is placed in a strong solution of chloride of calcium under the air-pump. With the solution of specific gravity, 1·247, 71 per cent. of the grains sink, 29 per cent. float. In 100 of the heavy grains thus separated there are generally 35 to 38 translucent grains, and only 18 opaque; while in 100 of the light grains thus separated, there are usually only 10 translucent grains, and as many as 70 opaque grains. With these observations on one physical distinction of importance between the two sorts of seed, I may introduce my experiments on their chemical differences.

The amount of water in the selected seeds was practically the same :—

Percentage of Water.

	Spalding red.	Hallett's white.
Translucent	16.12	14.34
Opaque	16.10	14.47

But the percentages of nitrogen were remarkably different :—

Percentage of Nitrogen.

	Spalding red.	Hallett's white.
Translucent	1.792	2.088
Opaque	1.405	1.521

It is usually assumed that the percentage of “flesh-formers” or albuminoids in feeding-materials may be deduced from the percentage of nitrogen by multiplying it by 6.25. According to this calculation, we find the percentage of albuminoids in the translucent grains of Hallett's white wheat to be 13.06, while in the opaque grains it is only 9.51. In Spalding red wheat, the flesh-formers in the translucent grains amount to 11.20 per cent., and to 8.78 per cent. only in the opaque grains. Assuming the medium grains to be intermediate in composition, it is easy to calculate what amount of nitrogen the whole wheat would contain. The calculated and experimental percentages of nitrogen are—

	Spalding red.	Hallett's white.
Percentages of nitrogen calculated	1.598	1.745
“ “ “	1.600	1.752

The chief conclusions at which I have arrived from my experiments previously published, from those recorded in the present note, and from others not yet made known, may be briefly summed up as follows :—

1. In a sample of wheat the translucent grains contain much more nitrogen than the opaque, but the same percentage of water.
2. The translucent grains are denser than the opaque.
3. A larger proportion of the opaque than of the translucent grains germinates and fruits.
4. The yield of dressed corn is greater from the denser seeds, and this dressed corn, from the greater perfection of its grains, is itself denser.—*London Pharm. Journ.*, March 1, 1866, from *Journal of Botany*.

KERR'S SOLUTION OF PERNITRATE OF IRON.*

BY T. AND H. SMITH.

Many pharmacutists, as well as ourselves, must have found the process for preparing Kerr's solution of pernitrate of iron very unsatisfactory, from the unstableness of the product yielded ; in a longer or shorter time it begins to lose its transparency and becomes unsightly, or through the production of nitrous gases of a more or less condensible nature the stopper may be thrown out or the bottle burst.

Kerr's solution being made by the action of nitric acid on metallic iron in the cold, contains a varying proportion of protoxide of iron, depending upon variations of temperature and other circumstances ; hence arise after changes. Lower oxides of nitrogen and possibly even free nitrogen may be produced from the continued action between the protoxide of iron and nitric acid ; part of the nitric acid being thus destroyed, the quantity necessary for the solution of the metallic oxide becomes deficient. In this way gases are liberated, and—from the production of a basic compound—the liquid becomes cloudy. It cannot have been intended that the compound should be a protopernitrate, such a preparation being a medicine, whose components are in a state of gradual change ; further, the British Pharmacopœia views it as a nitrate of the peroxide. With a view to remedy these inherent defects, we were led to adopt a method which has for a considerable time been satisfactorily prosecuted. We have little doubt that the process may have already occurred to some, and may have been advantageously applied by them. With the hope, however, that an approved method would not be unacceptable to such as have experienced the uncertain results of the recognized formula, we publish the following process :—

In making Kerr's solution, instead of acting directly on metallic iron with nitric acid, we dissolve the pulpy precipitate of per-

* The authors do not appear to be familiar with the solution of the U. S. Pharm. made by forming a protonitrate from a given portion of nitric acid and peroxidizing it afterwards by the proper addition of NO^2 . The process has been used here for ten years, and affords a permanent solution.—ED. AM. JOUR. PHARM.

oxide in the proper quantity of nitric acid, diluted with water, so as to produce the necessary measure of 30 fluid-ounces for each ounce of metallic iron.

Supposing 60 fluid-ounces the quantity to be prepared ; make a solution of perchloride of iron, according to the direction of the British Pharmacopœia, dilute with 2 or 3 gallons of cold water, and add ammonia or a weak solution of carbonate of soda till the precipitation is complete. The precipitate having subsided, wash by decantation or siphoning till completely free from saline taste. As the oxide of iron, after entire subsidence, contains too much water, the excess must be removed by pressure in a cloth, so that the remaining pulp may not occupy more space than about 30 ounces.

The solution of the oxide of iron may now be easily made ; dilute the acid to within a little of 30 ounces, introduce the pulpy mass gradually, with constant stirring, and bring the whole to the proper bulk.

A simple method of accurately arriving at the proper quantity is to measure into the vessel, before use, 60 ounces of water, and mark with a slip of gummed paper the level of the liquid. In order to avoid the risk of the formation of a basic compound (which the after addition of acid might fail entirely to dissolve), it is preferable to add the oxide to the acid than the reverse.

56 parts or 2 eq. of iron require 3 eq., or 162 parts of absolute nitric acid.

For 2 oz. of iron we find by proportion—

56 : 162 :: 437.5 × 2 : 2531 parts of nitric acid necessary.

Let 80 per cent. of anhydrous acid be present in the acid used, and the requisite quantity will be—

80 : 100 :: 2531 : 3164 grains, or, as the measure is inversely as the density—1500 : 1000 :: 3164 : 2109 water grs., or 4.82 fl. oz., or 4 oz. 6 drs. 33 ms.

As it is advisable to have a slight excess of acid in the pernitrate solution, one or two drachms more than the calculated quantity should be used.

Following rigidly the process given in the British Pharmacopœia, we have been unable to obtain a preparation giving no precipitate with ferridcyanide of potassium.—*London Pharm. Journ.*, November, 1866.

WHOLE-MEAL BREAD.

Sir,—I read with much satisfaction, in the 'Pharmaceutical Journal,' the report on Professor Church's experiments on wheat. It is a subject in which I take very great interest, seeing that wheat constitutes so large a portion of human subsistence. He says "dressed wheat," so that I am not sure whether he means wheat with or without its branny covering. The translucent grain (Russian) contains more gluten, and consequently more nitrogen. It is for this reason that Odessa wheat (the paste being much more tenacious and every way better when cooked) is preferred in Italy for making maccaroni, vermicelli, and the like paste.

In cold and rainy seasons, the yield of gluten, and therefore of nitrogen in wheat is very greatly reduced. Very many years ago, I recollect that the wheat, during such a season, contained little or no gluten, and resultantly little or no nitrogen. When made into griddle bread or cakes, the sides collapsed or closed until they came into absolute contact, greatly to the distress of the poor suffering people who knew not *the reason why*. Bakers empirically mix foreign with home wheat, because the foreign contains more gluten, and thence makes better and more nutritive bread. In warm summers and in warm climates, generally, the wheat is more glutinous. I have observed buyers in the markets here chewing a little wheat so as thereby to ascertain rudely the amount of the gluten. They did not know anything about gluten as such, but they knew, in a general way, that sticky wheat—wheat that left a good residue when chewed, and the starch was washed out of it—made superior bread. It is by reason of this superiority of foreign wheats, that they come to be mixed with our domestic wheats in the preparation of bread. In fact, British wheat alone will not commonly make good bread. I have examined Russian wheat, a small shabby-looking translucent grain, that yet made beautiful bread,—far better, indeed, than that resulting from plump, magnificent-looking English wheat. What I want to see everywhere, however, is the preparation of *whole-meal bread*—bread including the bran, with the bran-gluten and the bran-phosphates, so all-essential to good

bread and the nurture of our flesh and bones. But I do not think that the working classes, to whom it is so very important, will ever take to it fully until set the example by the more instructed classes, who yet themselves require instruction in this matter.

I am, Sir,

HENRY M'CORMAC, M. D.

Belfast, May 30, 1866.

London Pharm. Journ., July, 1866.

ON A NEW MACERATING APPARATUS.

BY MR. R. W. GILES.

The unostentatious arrangement exhibited before the Conference, for the more convenient exhaustion of vegetable substances in a minimum quantity of water, having proved very satisfactory in the preparation of infusum cinchonæ spissatum, and other allied liquors of ordinary and extensive use in pharmacy, I have thought it worthy of a few remarks at the present meeting. I do not desire to see Pharmaceutical Chemists become manufacturers, but I strongly believe that the *natural* mode of advancing the practice of pharmacy amongst *the many* in our profession is to give them a practical interest in the processes of the art, beginning with the most simple; and that the communication of simple forms of apparatus which will have the advantage of rendering ordinary processes easy and profitable, is one of the best means of attaining this object. I may take this opportunity of saying that the establishment of a Museum of Pharmaceutical Apparatus at Bloomsbury Square has long been an object of solicitude to me; and I trust that the present exhibition may ultimately result in such an institution, which we may hereafter consult with advantage and economy, and the origin of which we may pleasantly associate with this our agreeable visit to Nottingham.

The apparatus needs little description to those who have seen the model. It consists of a series of eight cone-shaped macerators, each provided with its receiver, and the water used for maceration is passed successively through the material divided amongst the eight cones—the material being reduced to a convenient state of pulverization, and each maceration being con-

tinued for such periods (varying from 1 hour to 12 hours) as may be appropriate to the character of the particular substances treated.

The advantage of this arrangement is that—with little more water than is required to moisten the whole—each of the eight portions receives eight successive macerations, which is sufficient to exhaust even such stubborn materials as cinchona bark. Other substances are exhausted with greater facility and, of course, require a correspondingly smaller quantity of water. If it is said that a similar result may be attained by a process of percolation in a single vessel, I can only reply that I shall be obliged to any gentlemen who will teach me how to avoid the practical difficulties of accomplishing this. I have utterly failed to do so, and out of these failures, and by successive steps, I have arrived at the present expedient, which, according to my experience, leaves nothing to be desired.

Subjoined is a table showing the results obtained from the treatment of 56 lb. of cinchona bark in the manner suggested. It is necessary to say that the progressive increase of density is sometimes affected by disturbing causes (*e. g.* the unequal duration of maceration in certain infusions which have stood all night), and that the success of the operation must be estimated by its general character, without expecting absolute uniformity in the intermediate stages.

Specific Gravity of Infusions recovered successively from Eight Macerating Vessels, each containing Seven Pounds Pounded Cinchona Bark.

	Quantity recovered.	Macerating Vessels.							
		1	2	3	4	5	6	7	8
1st Maceration.....	1½ gallons....	1017.6	1026.0	1034.0	1040.5	1044.1	1052.2	1057.7	1060.5
2d ".....	1 ".....	1004.6	1012.0	1016.1	1020.3	1025.5	1028.2	1032.3	1033.0
3d ".....	1 ".....	1002.9	1006.7	1011.3	1013.6	1017.1	1021.3	1026.3	1029.3
4th ".....	1 ".....	1002.6	1005.0	1007.4	1010.0	1012.9	1014.2	1020.3	1021.5
5th ".....	1 ".....	1002.6	1003.8	1005.4	1007.7	1009.7	1012.0	1014.0	1016.6
6th ".....	1 ".....	1001.8	1002.3	1004.3	1006.0	1007.9	1009.9	1011.6	1013.3
7th ".....	1 ".....	1001.1	1002.1	1003.7	1005.7	1006.5	1007.9	1009.8	1010.8
8th ".....	1 ".....	1000.9	1001.8	1003.4	1004.2	1005.2	1006.3	1007.8	1008.0
Total.....	8½ ".....								

It will be seen that the exhaustion of the bark has been sufficiently effected with 8½ gallons of water in lieu of 84 gallons directed to be used in the instruction of the British Pharma-

copœia (although a process of percolation is attempted in that case;) and, I may add, that this latter quality, if not actually adopted at Mr. Squire's suggestion, does at least coincide with his practical experience, *that cinchona bark cannot be adequately exhausted with less than twelve times its weight of water.*—*London Pharm. Journ.*, October, 1866.

ACTION OF ALKALIES UPON THE FERRO- AND FERRI-CYANIDES OF IRON.

BY WILLIAM SKEV.

Analyst to the Geological Survey, New Zealand.

It is generally set forth in those chemical works which treat upon these substances that "their color is instantly destroyed by alkalies," but from the results of a few experiments made upon them, it appears this statement requires some qualification.

Thus, if either of these compounds is treated with a very weak solution of caustic or carbonated alkali, the color thereof receives such an accession in its intensity as to rival the color of indigo blue.

If a solution of "Turnbull's blue" is employed, the change of color is very marked, while the solution keeps as clear as before. If used for writing purposes, it gives an intense blackish-blue ink on drying, and which is of some permanency; the addition of a certain quantity of ferricyanide of potassium affords a bright green ink.

Like the aqueous solution of basic Prussian blue, these compounds are precipitated from their solution by the addition of alcohol or soluble salts, especially if these have strong affinity for water.

It appears that the change in the intensity of the color is caused by the abstraction of a portion of the ferro- or ferri-cyanic acid, for if these compounds are repeatedly washed with water until nothing more is dissolved from them, the addition of the alkali in quantity only sufficient to produce these changes, immediately brings either of these acids into solution.

A great excess of carbonate of ammonia, by virtue of the

action it exercises upon the oxides of iron, dissolves these blue compounds, forming with them pink or red solutions, which, when spread upon paper, are at first almost invisible, but gradually darken if an excess of ferricyanide has been used. The final color is bright green.

These reactions appear both interesting and suggestive—interesting as affording other instances of indigo-blue-colored compounds of iron, to add to those of the tannate, gallate, and phosphate, and suggestive as intimating the possibility that in all these ferri- and ferro-compounds of iron the metal is in the same state of oxidation as it is in these other salts above alluded to.—*London Chem. News*, Dec. 14, 1866.

SYRUP OF THE PHOSPHATES OF IRON, QUINIA AND STRYCHNIA.

“Dr. Lyons has for some time past employed, with, he conceives, very important therapeutic results, this powerful tonic combination, for which the profession is mainly indebted to the late Dr. Eaton, Professor of Materia Medica in the University of Glasgow, and Professor Aitken of the Royal Victoria Hospital, Netley.

“This concentrated syrup of the phosphates is a perfectly clear and liquid fluid, slightly refracting light with the peculiar tint of the quinine solutions, and, viewed in mass, obliquely showing the bluish tint of the phosphate of iron held in solution. It is perfectly miscible with distilled water, has a strong styptic and distinctly chalybeate taste, and an aftertaste of quinine. It may be exhibited in doses of twenty to forty and even sixty minims, diluted with water, according to age and the circumstances of the case. It is well borne in the majority of cases; it acts as an invigorating stomachic, and sensibly improves appetite; it is an admirable general tonic; it appears to be a readily assimilable chalybeate, and is thus well adapted for certain chlorotic and anæmic states. In the morbid states of the nervous system which precede and accompany the development of the strumous diathesis, the influence of the strychnine salt appears to be exercised with great potency as a nervine, tonic and stimulant, and it would seem

to be an important agent in altering the morbid state of the nervous apparatus which presides over the function of nutrient assimilation. Physiologically, this influence may be supposed to be attributable to the well known action of the strychnine salts on the spinal cord, as well as by direct stimulus to the filaments of the great sympathetic plexuses distributed to the stomach and intestines. From the general tonic and invigorating effect of this drug, its influence on the stomach and promotion of appetite, as well as by the improved assimilation of food which it induces, it is a very valuable medicine in cases of strumous children threatened with scrofulous degeneration and ultimately with localized tubercular development. As a preparative to the use of cod-liver oil, and in certain cases as a concomitant to this food substitute, the syrup of the three phosphates will be found a very important adjunct in the treatment of numerous forms of strumous disease.

"But the employment of this admirable combination is not limited to the cases just mentioned. In depressed states of the system in the adult and the aged, in several of the conditions tending to adipose degeneration of important organs, such as the heart and kidneys, the syrup of the phosphates will be found a serviceable and reliable remedy. Where it is desired to combine a tonic and styptic to aid in checking the drain of albumen from the system in chronic disease of the kidneys, this combination will be found of great use.

"In Many forms of cutaneous diseases where a tonic effect is desired, this combination will be employed with benefit."

For the benefit of our readers we give the formula for the preparation of this valuable tonic, as obtained from the last edition of Dr. Aitken's "Practice of Medicine." This syrup (prepared by Neergard) is now in use in this city among many physicians, and is found to fully sustain the high commendation bestowed upon it by Drs. Aitken and Lyons.—[ED. N. Y. M. J.]

"R. Ferri sulph.,	.	.	.	3v.
Sodæ phosph.,	.	.	.	5j.
Quiniæ sulph.,	.	.	.	grs. cxcii.
Acid sulph. dil.,	.	.	.	q. s.
Aquæ Ammoniæ, .	.	.	.	q. s.

Strychniæ,	.	.	.	grs. vi.
Acid phosph. dil.,	.	.	.	℥xiv.
Sacchar. alb.,	.	.	.	℥xiv.

“Dissolve the sulphate of iron in one oz. boiling water, and the phosphate of soda in two oz. boiling water. Mix the solutions, and wash the precipitated phosphate of iron till the washings are tasteless. With sufficient diluted sulphuric acid, dissolve the sulphate of quinia in two oz. water. Precipitate the quinia with ammonia water, and carefully wash it. Dissolve the phosphate of iron and the quinia thus obtained, as also the strychnia, in the diluted phosphoric acid; then add the sugar, and dissolve the whole and mix without heat. The above syrup contains about one grain phosphate of iron, one grain phosphate of quinia, and one thirty-second of a grain of phosphate of strychnia in each drachm. The dose might therefore be a teaspoonful three times a day.

“The amount of phosphate of quinia might be increased according to circumstances; and if eight grains of strychnia were employed in place of six, as in the above, the phosphate of strychnia would be in the proportion of the one twenty-fourth of a grain in every fluidrachm of the syrup. I would scarcely venture on a much larger dose. In case of delicate children, with pale countenances and deficient appetites, I have given, with great benefit, a combination of equal parts of the above syrup and of that prepared by Mr. Edward Parrish (of Philadelphia), often called Chemical Food. To children between two and five years of age, the dose of this combination may be a teaspoonful three times daily.”—*Medical Press and Circular*, June 20, 1866, and *New York Medical Journal*, Feb., 1867.

NOTE.—Having had occasion to prepare this recipe, it was found to give a preparation answering the characteristics described, and which appears to be permanent. The amount of phosphate of soda is somewhat in excess, but as the commercial phosphate contains a variable quantity of chloride and sulphate the excess is of no detriment.

The amount of phosphate of iron ($2\text{FeO}, \text{HO}, \text{PO}_3$) is somewhat over-estimated. The amount of syrup yielded is twenty-four and one-half fluidounces, containing about three-fourths of a grain of phosphate of iron to one fluidrachm.

The manipulations are imperfect, and the following is suggested as

180 SEPARATION OF STRYCHNIA SALTS BY CARBOLIC ACID.

more satisfactory: Dissolve the iron and soda salts each in four fluidounces of warm water; mix the solutions; collect the precipitate on a paper filter, and wash with warm water; remove the filter from the funnel, and press carefully between folds of bibulous paper until no more water is absorbed by dry paper.

Having dissolved the sulphate of quinia in four ounces of water by careful addition of sulphuric acid, add a weak solution of ammonia, stirring constantly until a slight excess is added.

Collect the precipitated quinia on a paper filter, and proceed as with the iron salt. Both the precipitates will readily detach themselves from the wet filter without loss if the pressing is carefully done.

Dissolve the strychnia and quinia in 8 oz. of the phosphoric acid, and the iron salt in the remainder of the acid; mix the solutions; filter and add the sugar.

CHAS. BULLOCK.

SEPARATION OF STRYCHNIA SALTS BY CARBOLIC ACID.

M. Paul Bert, (*Gazette Med.*), states that when a very dilute solution (1 grain to 4,500 grains) of muriate of strychnia in water is agitated with a few drops of carbolie acid, it assumes the appearance of an emulsion, and is then found to possess but very little energy when injected hypodermically. But this relative inactivity is due to a simple diminution of absorption, and not to a destruction of the strychnia by the carbolie acid, because, by removing the latter by agitation with ether, the solution becomes as limpid and poisonous as at first.

If this emulsion is filtered with care, and the filtrate treated with ether, it has no poisonous property; on the contrary, the part resting on the filter being suspended in water, and deprived of carbolie acid by ether, yields the strychnia first employed. The carbolie acid, therefore, possesses the property of suspending the salt of strychnia, and singularly facilitates its separation. M. Bert has not experimented on extract of nux vomica, but from what he has observed in regard to curara he thinks that the separation may be effected in the same manner, and that perhaps the process may have use in manufacturing. The author is also assured that strychnia can be also easily extracted from putrefying animal matter by the same means, so as to be useful in medico-legal medicine.—*Jour. de Pharm.*, Janv., 1867.

Varieties.

On "*Glyconine*"—a new *Glycerole*?—To obtain this compound, M. Edmond Sichel employs 4 parts (by weight) of yolk of egg, and 5 parts of glycerin, which he mixes simply in a mortar. It has the consistence of liquid honey, and is unctuous like the fatty substances, over which it has the advantage of being easily removed by water. It is unalterable, a specimen having been left exposed to the air for three years with impunity. Applied to the skin, it forms on the surface a varnish, which protects it from the contact of the air. These properties render it serviceable for broken surfaces of all kinds, particularly for burns, erysipelas, and cutaneous affections, in which it soothes the itching, and also for sore nipples; its harmlessness prevents, in the latter case, any interruption of suckling.—*Journal de Pharmacie*, September, 1866. Extracted from *Bulletin de Thérapeutique*.

Emulsion of Tar.—M. Jeannel recommends the following form for this preparation:—

Crystals of carbonate of soda :	1 part (by weight)
Wood tar	1 part "
Water	100 parts "

Mix the tar and carbonate of soda intimately in a porcelain mortar, introduce the mixture into a large flask containing the water, shake vigorously for several minutes, and filter. This emulsion mixes with water in all proportions. The quantity of tar cannot be increased advantageously by using a larger proportion of carbonate of soda, for the author finds that with two per cent. of carbonate of soda and of tar, a brown mixture is formed, which soon deposits a black fluid resin.—*Chem. and Drug.*, Dec. 15, 1866, from *Journal de Pharmacie*.

Solubility of Iodine in Tannin.—Iodine is known to be more soluble in water containing tannin than in pure water. M. Koller has found that to dissolve one gramme (about $15\frac{1}{2}$ grains) in 450 grammes (about $14\frac{1}{2}$ oz. Troy) of water at 120° F., the latter must contain 3.29 grammes (about 50 grains) of tannin. By raising the temperature, the proportion of tannin may be diminished. Pure water dissolves more iodine than water containing sugar.—*Chem. and Drug.* Dec. 15, 1866, from *Zeitschrift f. Chemie*.

On Resins for Varnishes.—By M. VIOLETTE.—The resins, Calcutta copal and its congeners, as well as amber, which form the basis of varnishes, are not in their crude state soluble in ether, oil of turpentine, benzine, petroleum, and other hydrocarbons, nor in vegetable oils. They

become soluble when, by a preliminary distillation, they have lost 25 per cent. of their weight. This result, announced by the author in 1862, was the subject of a former memoir presented to the Academy of Sciences. The present paper contains some new researches, the conclusions of which may be stated as follows :—

1st. The above resins, when heated to a temperature of 350° or 400° centigrade (about 660° to 750° Fahrenheit) in a closed vessel, acquire, after cooling, the property of dissolving in the above liquids, and constitute excellent varnishes without any loss of material.

2d. When heated as above mentioned *alone*, or mixed with one or more of the liquids named, these resins dissolve perfectly in them, and constitute new and very fine varnishes.

3d. Calcutta copal resin, heated in this manner, with one-third of its weight of boiled linseed oil, and three quarters of its weight of oil of turpentine, gives at once, without loss, a thick varnish, clear, limpid, of a fine color, slightly yellow, quite fit for carriages and the most delicate interior and exterior house painting.

Resins, then, acquire new properties under the joint influence of heat and pressure: the latter rises as high as twenty atmospheres. This is a difficulty which manufacturers will have to solve in order to transfer this new process from the laboratory to the manufactory.—*Chem. and Drug.*, Dec. 15, 1866, from *Journal de Pharmacie*.

Silk Collodion.—The product of the silkworm has been reduced again by art, to the raw material or gum from which the insect spins its dainty fibre. A Frenchman, M. Persoz, fils, makes the discovery, using chloride of zinc as a solvent for the silk, and then separating the silk from the solvent by Prof. Graham's dialysis. This is a very simple process of filtration. A gutta-percha vessel with a parchment bottom receives the solution (diluted with water to the consistency of collodion), and is set upon the surface of water. The chloride of zinc percolates through the moistened parchment bottom, and mixes with the water; leaving the pure fiberless silk substance behind. For photographic purposes, it is iodized by mixing with an aqueous solution of iodide, and then dried and sensitized. The chloride, before using, is heated with a small quantity of oxide of zinc, to neutralize any excess of acid, and then filtered through fine linen to remove the residuum of the oxide. For a prompt solution, the chloride is kept warm. The separation, to be entire, occupies a few days.—*Drug. Circ.*, Feb., 1867, from *Scientific American*.

Modified Donovan's Solution.—(*Gazette Hebdomadaire*, 3 Aout, 1866.) The formula for Donovan's Solution has been modified in various ways, and it is, perhaps, in part due to this circumstance that we must attribute the want of uniformity in the results obtained by the use of this preparation. It is difficult to say to which one of these preparations we

should give the preference, or by the aid of which one we can obtain the most satisfactory results. M. Pedrelli (*Giornale Italiano delle Malattie Veneri et Bulletin de Therapeutique*), physician to the Hospital of St. Ursula, at Bologna, recommends the following formula, which has in his hands produced most excellent results in various diseases of the skin (obstinate syphilides, lupus, etc.):—

Iodide of arsenic, 20 centigrammes ;

Distilled water, 120 grammes.

Dissolve in a glass vessel by the aid of heat, and add

Biniodide of mercury, 40 centigrammes ;

Iodide of potassium, 3 or 4 grammes.

Filter and preserve in a well stoppered and colored glass bottle. The liquor thus obtained is clear, and has a light, pale tint. Four grammes of this preparation contain about six millegrammes of iodide of arsenic, and twelve of biniodide of mercury. The dose which he administers varies from four to one hundred drops, given in distilled water, three times daily. He increases the dose each day by one or two drops.—*N. Y. Med. Journ.*, Feb., 1867.

Capsicum in Delirium Tremens.—(Medical Press and Circular, April 18, and June 20, 1866.) Dr. Lyons urges the use of capsicum in from twenty to thirty grain doses in the invasive stages of delirium tremens. He administers it either in bolus or capsules. A simple dose sometimes produces profound and refreshing sleeps and thus cuts short the disease. Several cases are narrated, showing the beneficial efficacy of the drug when thus used. As capsicum belongs to the great order of the Solanaceæ, Dr. Lyons suggests the possibility of its containing a narcotic principle hitherto undiscovered.—*N. Y. Med. Journ.*, Feb., 1867.

The Preservation of Sulphate of Iron.—(London Lancet, June 9, 1866.) Signor Pavis recommends the following method of preserving sulphate of iron from oxidation. Mix four parts of pure crystallized sulphate of iron, and an equal quantity of finely powdered gum arabic, with distilled water, and evaporate the solution in a water bath, at a low heat, till it has a sufficient consistency to be poured out on plates of glass. When it has been poured out in this way and allowed to dry at a temperature of 30° Cent. in the dark, it may be cut up into lozenges, which can be kept for any length of time in a colored stoppered bottle. A further account of this method is published in the *Tijdschrift voor Wetenschappelijke Pharm.*—*N. Y. Med. Journ.*, Feb., 1867.

A Permanent Mass for Pilula Ferri Iodidi.—(The Medical Press and Circular, June 6, 1866.) Iodide of iron being so unstable when exposed to air, Mr. Gross proposes the following form for a permanent pill-mass, which may be prepared extemporaneously :—

Take of Iodine	40 grains.
Reduced iron.	
Powdered acacia—ää	10 "
Powdered sugar	20 "
Glycerin	15 drops.
Powdered althæa	q. s.

To be made into 50 pills.

Triturate the iodine and the iron thoroughly together, dry, until they are reduced to a fine powder; then add the glycerin, and rub till the fumes of iodine cease to be given off, and the mixture assumes a greenish color. Then add the acacia and sugar, and, lastly, sufficient powdered althæa to bring to a pilular consistence.

The mass should be very stiff. When the pills are formed roll them in ferri pulv., and then coat them with tolu.—*N. Y. Med. Journ.*, Feb., 1867.

Sirop de Pepsine and Crème de Bismuth.—By L. CH. BOISLINIERE, M. D.
—I communicate my formulæ for the two following preparations:—

Sirop de Pepsine.

R Boudalt's pepsin, ʒijss.
Distilled water, ʒiv.
Sherry wine, ʒiv.

Mix the pepsin with the water and sherry, and digest four hours, at a temperature not to exceed 85° F. Then add—

Syrup of strawberries, ʒiv.
Tinct. Cardamom comp., ʒiv.
Carmine, grs. ij.

Digest and filter. Each tablespoonful contains five grains of pure pepsin.

Dose.—One tablespoonful immediately after every meal.

Crème de Bismuth.

R French Subnitrate of Bismuth, ʒijss.
Mucilage of gum,
Syrup strawberries, each ʒij.
Essence Vanilla, gtt. xxx.
Carmine, grs. ij.

M. S.—Shake vial and take one teaspoonful three times a day, before every meal. Each teaspoonful contains five grains of the subnitrate of bismuth.

St. Louis, Nov. 16, 1866.

—*Richmond (Va.) Med. Journ.*, Feb., 1867.

Union of Mercury and Aluminium.—By DR. THOMAS H. CHANDLER, BOSTON.—A remark by Dr. McQuillen, in the December number of the

Dental Cosmos, on the "Stone-knife," that "the serrations become clogged with gold," reminds me to say that the serrations of our instruments are usually made on a wrong principle. They are made with a fine flat-sided knife-shaped file, instead of with a file with curved sides. The former will always clog, the latter never. While writing, I will mention a very curious effect of mercury on aluminium, which I noticed accidentally some time ago. The books tell us that they will not unite, but I undertook to polish a piece with a buckskin, which had been in use for a long time for squeezing the mercury from amalgam, and was surprised, while holding the aluminium in my hand, to notice a great heat which was developed from it. On looking at it closely, I was still more astonished to perceive a remarkable efflorescence, like the mould on old cheese, springing up and growing visibly to the naked eye. I pursued the experiment for more than an hour, with the same result. Thinking that perhaps it might be something beside the mercury which induced the result, I took a clean piece of felt, and placed some mercury upon it, wetting it, and breaking up the globules into fine particles with my finger, and rubbing them well in. Upon rubbing the aluminium with this, the same result was again produced. Under a magnifying-glass the effect is very fine. The piece of aluminium which I used was one which had been through the vulcanizer, under Fowler's process. It is just possible that the sulphur may have had something to do with the phenomenon.—*Dental Cosmos*, Feb., 1867.

A Superior Glue.—A very superior glue may be made by dissolving three parts of India-rubber in thirty-four parts of naphtha. Heat and agitation will be required to readily effect the solution. When the rubber is completely dissolved, add sixty-four parts of finely powdered shellac, which must also be heated in the mixture until all is dissolved. This mixture may be obtained in sheets like glue, by pouring it, when hot, upon plates of metal, where it will harden. When required for use it may be simply heated in a pot till soft. Two pieces of wood or leather joined together with this glue can scarcely be sundered without a fracture or tearing of the parts.—*Drug. Circ.*, Jan., 1867.

Welding Mixture.—Mr. William A. Sweet, of Syracuse, says in the *Scientific American*: "I send you a recipe for using on cast steel in welding, and in restoring burnt steel. It is the best preparation that I have ever seen or used. One and a half pounds of borax, half a pound of sal ammoniac, quarter of a pound of prussiate of potash, one ounce of rosin, one gill of alcohol, and one gill of water. Pound fine, and boil in an iron kettle slowly, until it becomes a thick paste. Use as borax.—*Ibid.*

Spongy Platinum.—The following method is recommended for preparing spongy platinum: When sal ammoniac is added to a solution of plati-

num in aqua regia, a precipitate consisting of the double chloride of platinum and ammonium is formed. If this double salt be heated to redness, its volatile constituents escape into the atmosphere and leave the platinum behind in porous and slightly adherent masses—as spongy platinum, in fact.—*Journal of Applied Chemistry*.

Porosity of Caoutchouc.—M. Payen states in *Comptes Rendus* that a microscopic examination of thin sheets of caoutchouc discloses minute holes or pores, which are rounded, and communicate with each other. Contact with liquid makes these pores more distinct. Vulcanized India-rubber exhibits narrower cavities and concentric circles spreading from one pore to another, showing successive zones of diminishing action of the sulphur. By exposure to water the caoutchouc becomes whiter and opaque through absorbing the fluid. M. Payen considers this porosity to be concerned in the dialytic action of India-rubber on gases discovered by Professor Graham.—*Intellectual Observer*.

Science in the Dairy.—There are many dairymen who persist in thinking it a foolish whim, that the milk last drawn from the udder of a cow contains more cream than the first obtained. Yet careful analyses have fully proven the correctness of the assumption. Schubler says the milk last drawn contains three times as much cream as that first procured. Dr. Anderson, in "Dickerson's Practical Agriculture," asserts that he found, by actual analysis, in one instance, that the last cup of milk drawn from the udder contained *sixteen* times as much cream as the first cup. The separation of cream from the milk takes place, in part, in the udder of the cow, particularly if the cow is suffered to stand at rest for some time previous to milking.

The exercise required of a cow that is driven a considerable distance, just before being milked, causes an increased play of her respiratory organs. The excess of oxygen thus respired unites with a portion of the butter, of which the cream is largely composed, and consumes it. The same is the case when a cow is harassed, or in any way seriously annoyed, just previous to being milked. It should be a great care of all dairy farmers, to keep their cows as free as possible from every kind of annoyance, and thus prevent them from inhaling an excess of oxygen.

The animal heat evolved in the consumption of an excess of oxygen, more than is sufficient to act properly on the blood, besides destroying the cream, also decreases the volume of milk, and elevates the temperature of the same to such an extent that acetous fermentation is induced, which cannot be arrested even after the milk is taken from the cow; hence the milk is diminished in richness, and speedily becomes sour. For the above reasons stall-fed cows, as a general thing, give richer milk than those suffered to run in the fields. For the same reason morning's milk is richer than night's milk. The quietness of night is favorable to the formation and

preservation of cream. Repeated analyses have proven all the above facts. There is more philosophy in the dairy business than most people are aware of.

There are so many changes which are constantly occurring to the dairyman that cause variations in the value of his milk, even when the conditions of feeding are the same, as to render a chemical knowledge, or at least ready access to chemical experiments in this direction, of the most economic and practical importance. It is true that the animal body is not a mere chemical laboratory, in which the chemist may operate as he pleases; for there is a power there—a vitality superior to his science; but by his intelligent concurrence with, and proper regard for that vitality, the changes and conditions which he desires can very generally be effected.—*Druggists' Circular*, Jan. 1867.

Editorial Department.

SCHOOL OF PHARMACY.—We are informed that the class of candidates for the Diploma of the Philadelphia College of Pharmacy is much larger than ever before, and that the commencement ceremonies are to be held in the Academy of Music, which has been engaged for the occasion, which is always one of great interest to the junior members of our profession.

ERRATUM.—In the editorial note at page 473, Sept., 1866, read “vol. xiv.,” instead of “vol. xxxiv.,” as there printed in the notice of American Opium Culture.

PARIS EXPOSITION.—The time for this great exhibition of the products and manufactures of all nations is rapidly approaching (to open April 1st), and already we hear of many preparing to visit Europe, under the stimulus of seeing this grand collection of interesting objects. Much has been said about the difficulties of accommodation to visitors, high prices, etc. We cannot but believe that the authorities have not been unmindful of what is required to meet the emergencies in the way of provision and accommodation; and whilst living will probably be higher than at ordinary times, the European plan of paying for lodging and board as separate items will enable persons to regulate their expenses to a very considerable degree by the depth of their purses. The following extract from the *Chemical News*, of London, exhibits a novel plan of visiting Paris by the thousand, at fixed times and rates for the excursion:

Visitors to the Paris Exhibition.—Probably many of our readers have determined to visit Paris during the time of the International Exhibition. It may not have occurred to such that arrangements for such visits should be made at once, beforehand, but we would press upon all the necessity of making them

as soon as they can. The tradesmen and hotel-keepers of Paris are promising themselves a golden harvest, and there is little chance of any arrangement being made with them, unless combined action be at once set on foot. For workmen we are afraid the visit will be impossible, so high will be the prices for accommodation. From inquiries that we have made, the following seems most feasible, and may be carried into effect if time be not lost. Mr. Thomas Cook, the well-known excursion manager, has obtained reliable assurance for the accommodation of 1,000 or more visitors at a time from April to the end of October, at the nearly uniform rate of 10s. a day, for bed, meat breakfast, dinner at *table d'hôte*, and lights, a small charge being added in some cases for service. By a regular succession of visitors in the full numbers, this reasonable scheme may be carried out. We recommend this plan to those who propose a visit to Paris, since we do not think they will obtain such good terms by private contract—either singly or in parties.

LARITZ FIR WOOL MANUFACTURES AND PREPARATIONS are among the novelties of medicine. They consist of, first, the essential oils of the leaves of fir and pine trees, common in Germany, called fir wool oil; second, fir wool extract; and, third, fir wool clothing and wadding. The oil is made by distilling the fir leaves with water, in the ordinary way. It is a terebinthinate oil, with a pungent, rather agreeable odor, resinifies on exposure, like oil of turpentine, and varies in specific gravity from 876 to 912, according as it is made from pine or fir leaves. It is used generally as an external application, either as embrocation, or applied by wadding, about 3 teaspoonfuls at a time. Internally, the dose is 15 to 20 drops. It is used in gout and rheumatism, dropsy, paralysis, and chronic skin diseases.

The extract is the result of evaporating the watery decoction of the leaves, and is used as an addition to the warm bath.

The clothing and wadding are probably made from the fibrous material of the leaves, spun and woven, and from possessing a certain mechanically irritating quality of a gentle flannel-like character. We know nothing of the merits of these articles as therapeutic agents.

F. W. Clemenz, M. D., of Rodolstadt, Germany, is the introducer of these articles; Aschenbach & Miller, of Philadelphia, the agents.

Proceedings of the American Pharmaceutical Association at the Fourteenth Annual Meeting, held in Detroit, Mich., August, 1866. Also the Constitution and roll of Members. Philad., 1866, pp. 316.

The volume of Proceedings of the Association was received too late for notice in our last number, although the Editor, Prof. Maisch, in granting us the courtesy of extracting some of the papers for publication from advanced sheets, fully expected to have received it from the printer in time for notice. The portions of the papers not heretofore noticed are,—the report on the Internal Revenue Law, by Dr. E. R. Squibb, of about 50 pages; the report on the Progress of Pharmacy, by Mr. Enno Sander, of about 60 pages; and the contribution to a report from the Pharmacopœia Committee, also by Dr. Squibb, which we print in the present number,

(see page 129.) The report on the Progress of Pharmacy, which was not produced at the meeting, and which we here see for the first time, is arranged much in the usual manner:—a chapter on new publications, Pharmacy, processes and apparatus, powders, distilled waters, extracts, tinctures, syrups, pills, cerates and miscellaneous preparations. *Materia Medica*, arranged under the natural orders. Chemistry—inorganic, organic and analytical. In many instances Mr. Sander has extended his notices so as to add much to the interest of the report, which usually has been confined to an enumeration of papers and subjects. Many recipes are given and, whilst the report is not as extended as some that have preceded it, the very sufficient reasons of Mr. Sander, viz., the prevalence of epidemic cholera and personal indisposition, render it a wonder that so much was accomplished so far from the literary sources of the materials which supply the facts.

Reflecting upon the liability to a recurrence of this difficulty and consequent disappointment of the Association in future, Mr. Sander suggests the appointment of a *permanent Reporter on the Progress of Pharmacy*, and remarks:—

“It appears that very few members are so entirely independent that they would be able to disregard their own business relations when they come into collision with their duties towards the Association; but a permanent reporter, who constantly receives the new publications immediately after their issue, will be enabled to completely organize his labor and adopt such a system that accidents will not much disturb him, and a failure be rendered almost an impossibility. If selected from the number of our members who devote themselves much to study and to the development of the pharmaceutical sciences, the reporter would even not feel the increase of his labors, he would incorporate them into regular studies and thus be enabled to improve and turn to advantage the experience gained during his studies. Besides, the regular issue of such a report by one and the same member, would not fail to attract the attention of booksellers and publishers, who would eagerly embrace the opportunity of having their publications brought to the notice of the profession through a medium which is sure to reach every person in this country, who has any interest in the advancement of scientific pursuits.”

The importance of this suggestion merits the earnest consideration of the Association. The reporter should have access to a greater variety of periodical literature than is likely to reach the Association in exchange, and besides the report should be as close to the time of meeting as is possible.

The book as a whole is a decided improvement on that of 1865 in its contents and mechanical execution. The Permanent Secretary has done his work well and the volume is a credit to the Association. The price fixed upon by the Executive Committee is \$1.20 in paper and \$1.50 in cloth binding. The Committee also call attention to the back volumes.

The whole set from the beginning may be had for twelve or thirteen dollars, and those who desire them should attend to it soon before they are out of print.

Burgoyne, Burbidges & Squire's Monthly Price Current, 16 Coleman Street, London. Established A. D. 1741; pp. 16, folio.

For some months past this extraordinary circular has been received at our office, and, as a curiosity in its way, we may notice its contents cursorily. The firm are wholesale druggists, and dealers in everything appertaining to a druggist's wants, including drugs, chemicals, oils, glassware, paints, dyes and sundries, instruments of all kinds, medicine chests, etc. The circular is closely printed on thin tissue writing paper, each page being 16 by 20½ inches, in columns, and priced. The editing this circular intelligently must involve a great amount of labor and business talent. At the bottom of the last page are two columns, exhibiting, first, articles which are higher in price than last month; second, articles which are lower in price than last month. These enable the consumer to ascertain, without going over the whole circular, the most important changes.

Brathwaite's Retrospect of Practical Medicine and Surgery, Part LIV., January, 1867. New York: W. A. Townsend publisher; pp. 304.

This semi-annual has been received from the publisher. It contains the usual digest of the important papers of the medical journals, more especially of the English journals.

Special Notice.

Dr. Otto C. Berg died at Berlin, on the 20th day of November, 1866, after an activity there of more than twenty years, as professor of botany and pharmacognosy. As teacher and author, and through his noble character, he has secured for himself the esteem and love of all who had the pleasure of knowing him. The circle of his pupils and his admirers is therefore very large, and his early death is deeply felt, not only at the scene of his labors, but wherever science is cultivated.

In accordance with the expressed wish of his friends and pupils, to pay a lasting tribute to the memory of the departed, by erecting a monument over his tomb, at the Dorotheenstadt Cemetery, as has been done to his former colleagues, Lintz, Ritter, Enke, J. Müller, Mitscherlich, and H. Rose, a committee has been organized at Berlin to collect the requisite funds. For the purpose of affording an opportunity to his former pupils, friends and admirers to aid in this undertaking, the undersigned beg to inform them that they are willing to receive contributions, to forward the same to the Central Committee at Berlin, and to account therefor at the proper time.

Dr. FR. HOFFMANN, 243 East 10th Street, New York.

ROB. WENDLER, 370 Atlantic Street, Brooklyn.

J. M. MAISOH, 1607 Ridge Avenue, Philadelphia.

OBITUARIES.

OTTO CARL BERG was born at Stettin, Prussia, August 15th, 1815, where his father was located as physician and medical counsellor. He was the fourth among seven brothers, and lost his father when in his seventh year. He was educated at the private school of Rev. Bindemann, at Neuendorf, and afterwards at the Stettin Gymnasium (classical school). From 1831 to 1835 he served his apprenticeship at Demmin, where he devoted the early morning hours to collecting and examining plants. After passing his examination as clerk (Gehilfe), and serving as such in several places, he went to the university of Berlin in the spring of 1838, and in June, 1839, passed the State's examinations as apothecary, when for about a year after the laboratory of the "Pelican" pharmacy in Berlin was under his charge.

Being without means and without prospects to establish himself, he concluded to devote himself exclusively to botany, and while continuing his studies gained his livelihood by preparing young pharmacutists for the state examinations, commenced his Handbook of Pharmaceutical Botany, and prepared himself for matriculation at the University of Berlin, where he absolved his three years' studies in 1845, in which year the first edition of his "Handbook" appeared in print.

In 1848 Berg was promoted by the philosophical faculty, and established himself in 1849 as private lecturer on pharmaceutical botany and pharmacognosy. After the death of Professor Link, the eminent botanist, who had been his warm friend, he became a member of the examining committee, and continued to work in both spheres to his death.

As a teacher he was clear and objective, and excellent in diagnosis; as a man he was noble and good, grave in consequence of the cares of his early life and his unceasing labors, but modest and cheerful in his intercourse. A short journey during the summer holidays excepted, he was engaged throughout the year with his lectures and private instructions, from early in the morning until 7 or 8 o'clock in the evening. During the summer the Sundays were devoted to botanical excursions; in winter to microscopical examinations of botanical objects; the large number of his pupils were then admitted in groups for one hour each.

Besides numerous essays published in journals he issued the following works, copiously embellished with microscopical drawings executed by himself: Handbook of Pharmaceutical Botany (five editions, 1845-66); Pharmacognosy (three editions, 1851-63); Characteristics of the Genera of Official Plants (two editions, 1848-62); Representation and Description of the Official Plants (in 34 parts, 1853-64); Anatomical Atlas of the Cinchona Barks contained in the Cabinet of the University of Berlin (1864); Monograph of the Myrtaceæ of Brazil, and the unfinished results of nine years' labor: A Monograph of the Melastomaceæ of Brazil. He was also co-laborer and author of the botanical and pharmacological parts

of the Seventh Prussian Pharmacopœia, and of the recently completed Pharmacopœa Germanica.

Dr. Otto Carl Berg died on the 20th of November, 1866. By his death one of the largest Universities in the world lost one of its most prominent teachers, and Science one of her most zealous and devoted scholars, who, by faithful and unceasing labor among discouraging circumstances, became a lasting ornament to science, and to the profession of pharmacy in particular.

ED. FRANÇOIS FRÉMY, a venerable French Pharmacien, died at Versailles, on the 10th of November, at the age of 93 years, in the full possession of his mental faculties. He was born at Auxerre on the 20th of Sept., 1774, entered the republican army in 1792, and in 1797 returned to Paris, where finding M. Courtois, (who afterwards discovered Iodine,) a pupil of his father, engaged as preparateur in the laboratory of M. Fourcroy at the *Ecole Polytechnique*, he was invited to join him, and for two years M. Frémy remained in that service, where he gained the friendship of Fourcroy and Thenard. Soon after, he entered the laboratory of Séguin, a chemist who had acquired much wealth by conducting the tanneries for the supply of leather to the army in the early days of the Republic, and who being ambitious to acquire a scientific reputation, established a large laboratory at Jouy, and Courtois and Frémy were admitted. These two friends passed four years in this laboratory, and it was during this time, and under the immediate labors of Courtois, that the investigations on opium, which resulted in the discovery of the substance now known as morphia, were made, and the memoir containing all the investigations of Courtois was read by Séguin before the Institute on the 24th of Dec., 1804, and subsequently printed under his name in the *Annales de Chimie*. When afterwards Sertuérner discovered the true nature of and gave the name to morphia, Vanquelin sought to reclaim for Séguin the priority of the discovery. After three years here he commenced lecturing gratuitously on chemistry to the junior students and to physicians, some of whom, to testify their sense of his disinterested kindness, offered to purchase a Pharmaceutical shop for him at Versailles, which, by the advice of Thenard, he accepted, the latter aiding him with funds. This Pharmacy became afterwards the most celebrated in Versailles. We have not space to follow the subsequent career of M. Frémy, but will merely state that in 1811 he was appointed by Napoleon to the Military School at St. Cyr. He conducted a private analytical laboratory, was much engaged in medico-legal and agricultural chemistry; in 1834 he was made Chevalier of the Legion of Honor and became an officer in 1859. M. Frémy has left two sons, both of whom are well known in science. The city authorities of Versailles testified their appreciation of his worth and standing by tendering him funeral honors.

JOURNALS, &c., RECEIVED SINCE THE LAST ISSUE.

The Pharmaceutical Journal and Transactions, London.

The Chemist and Druggist, London.

Chemical News, London.

Vierteljahresschrift für praktische Pharmacie, Munich. By Dr. G. C. Wittstein.

Journal de Pharmacie, Paris.

Journal de Chimie Médicale, Paris.

Repertoire de Pharmacie, Paris.

Bulletin de la Société de Pharmacie de Bruxelles.

Revista Farmaceutica, Buenos Ayres.

La Emulacion, Habana, Cuba.

The Druggist's Circular and Chemical Gazette, New York.

American Journal of the Medical Sciences, Philadelphia.

Journal of the Franklin Institute, Philadelphia.

Proceedings of the Academy of Natural Sciences of Philadelphia.

Boston Medical and Surgical Journal.

The American Journal of Science and Arts, New Haven, Conn.

The Medical and Surgical Reporter, Philadelphia.

The American Journal of Insanity, Utica, N. Y.

Medical News and Library, Philadelphia.

The Cincinnati Lancet and Observer, edited by Dr. E. B. Stevens.

The Ohio Medical and Surgical Journal.

The Chicago Medical Journal, edited by Samuel Brainard, M. D., and J. Adams Allen, M. D.

The Pacific Medical and Surgical Journal, edited by Henry Gibbons, M. D. San Francisco, Cal.

Buffalo Medical and Surgical Journal, Buffalo. Edited by Dr. I. F. Miner.

The Chicago Medical Examiner, Chicago.

Eclectic Medical Journal. Edited by Dr. J. M. Scudder.

The San Francisco Medical Press. Dr. E. S. Cooper, Editor.

St. Louis Medical and Surgical Journal. Edited by Drs. Linton and White.

Dental Cosmos, Edited by J. H. McQuillan, D. D. S., and George J. Zeigler, M. D.

The Richmond Medical Journal. Edited and published by Drs. Gaillard and McChesney. Richmond, Va.

The Journal of Materia Medica. Edited by Dr. Joseph Bates and H. A. Tilden, New Lebanon, N. Y.

New York Medical Journal, Oct., 1866.

United States Medical Journal, Chicago.

The Savannah Journal of Medicine. By MM. Harriss, Read and Thomas.

The Medical Reporter: a semi-monthly Record of Medicine and Surgery. St. Louis.

The Medical Record. New York. Vol. I. No. 16. Semi-monthly.

The Journal of Applied Chemistry, New York. Professor Dussauce, Editor. 1866.

Atlanta Medical and Surgical Journal, Oct., 1866. J. G. and W. T. Westmoreland, Editors. Atlanta, Ga.

The Detroit Review of Medicine and Pharmacy.

The Nashville Journal of Medicine and Surgery.

The Dental Times: a Quarterly Journal of Dental Science.

The New Orleans Medical Record. Vol. I. Nos. 1, 2, and 3.

Diphtheria; a Prize Essay. By E. G. Gaillard, M. D., Richmond, Va.

University Journal of Medicine and Surgery. E. S. Paine, M. D.

The Galveston Medical Journal. Edited by G. Dowell, M. D.

Braithwaite's Retrospect of Practical Medicine and Surgery. N. Y.

AMERICAN JOURNAL OF PHARMACY.

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ADVERTISING SHEET.—An advertising sheet will be appended to each number of the Journal, in which advertisements of new preparations and apparatus, business notices, book notices, etc., will be inserted at the rate of \$5.00 per page for one insertion, or \$20.00 per annum for six insertions.

As a prominent object of the establishment of this Journal, was the discouragement of empiricism, advertisements of quack medicines, properly so called, will be excluded. Advertisements to be directed to the Editor as above.

AGENTS.

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Foreign Exchanges sent to Mr. C. J. Skeet, Bookseller, 10 King William St., Charing Cross, London, W.C., directed for the American Journal of Pharmacy, care of John Pennington & Son, Phila.

JOURNAL OF PHARMACY,

PUBLISHED BY AUTHORITY OF

THE PHILADELPHIA COLLEGE OF PHARMACY.

EDITED BY

WILLIAM PROCTER, JR.

THIRD SERIES.]

MAY, 1867.

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NOTICE BY THE PUBLISHING COMMITTEE.

The American Journal of Pharmacy has now completed its 38th volume. On an examination of the stock of the Journal, the Committee find that eight of the volumes are wholly or partially out of print—viz., vols 1, 2, 3 and 5 of the first series, and vol. 1 of the 2d series, and the 4th, 5th and 13th vols. of the 3d series. All the remaining volumes, 29 in number, they can supply on demand. Believing that the work embodies a large amount of information, extremely valuable to Apothecaries, Druggists and Physicians—comprehending, in fact, a faithful record of the development of Pharmaceutical science and inventions during the period of its issue, now about thirty-eight years, both in Europe and America, the Committee consider that no Pharmaceutical library should be without it.

Besides the abstract and applied science embodied in this work, a large number of formulæ are contained in it, including many, which though not officinal, are more or less valuable and in use.

As an inducement to Subscribers to complete their sets as far as possible, the Committee offer the back volumes to the 24th inclusive, at the reduced price of \$1.50 each, nett.

The volumes 25 to 38 inclusive, except the 28th and 29th volumes, are held at the publishing price, 3.00, unless a full set is taken, in which case they will be supplied at \$2.50 per volume.

The Committee offer the publication price in money for the 4th number of the 1st volume, published January, 1830; for the complete 2d volume, commencing April, 1830; for the complete 3d volume (1831); for the complete 5th volume, 1833, and for the complete 7th volume, commencing April, 1835. They will also be glad to receive and pay for the January and July numbers of 1857, for the July number, 1856, for the 37th volume, (1865,) and for the January number, 1863.

CHARLES ELLIS,
Prof. JOHN M. MAISCH,
ALFRED B. TAYLOR,
Prof. EDWARD PARRISH,
W. PROCTER, JR.,

} Committee.

THE
AMERICAN JOURNAL OF PHARMACY.

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MAY, 1867.  
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ON THE PREPARATION OF DEODORIZED TINCTURE OF
OPIUM.

By ALBERT E. EBERT.

Among the many new preparations incorporated in our present codex, and exemplifying the progress of pharmaceutical science, none, perhaps, was greeted with more satisfaction by physician and apothecary than the deodorized tincture of opium. Combining, in a liquid form, all of the narcotic properties of the drug, without the noxious, odorous and resinous principles, it is capable of producing the soporific effects of opium without subsequent prostration of the nervous system.

Notwithstanding the acknowledged advantages of the deodorized tincture, it has not been so generally used as was expected, and this fact may be partially explained, at least, by considerations of cost. Its expensiveness is due, in great measure, to the waste of the ether employed in the process of the deodorization, for, though the separated portion of this liquid may be rendered available for subsequent use by distillation, this method of purification is not practicable with the majority of the pharmaciens, and without especial precaution it is attended with a risk greater than the value of the ether. These facts discourage the apothecary, and tend to place the preparation of the tincture solely in the hands of the wholesale manufacturer. With the view of regaining this ether without resort to dis-

tillation I made numerous experiments, and finally discovered a method by which the object may be accomplished at a trifling cost, and with little trouble. Upon the addition of a caustic alkali to the ethereal solution the odorous, resinous, and coloring matters are nearly all withdrawn, and the ether is fitted for future use as a deodorizer. The process is as follows: Take of common caustic potassa one troyounce; place it in one pint of the ethereal solution, having previously added two fluidounces of water, and agitate occasionally for twenty-four hours. Decant the ether, mix it with four fluidounces of distilled water, allow it to separate; again remove the ether and keep it for further use.

While engaged in the foregoing manipulations, I conceived the idea of substituting for the ether the light product, obtained in the rectification of petroleum, known as "benzine." A trial of this solvent convinced me of its applicability, and, after a series of carefully conducted experiments, I became convinced of its decided superiority. The results of my investigation, with the attending advantages, may be stated as follows:—The odorous and resinous matters in the aqueous solution of opium are more completely removed by benzine, while the morphia is not dissolved to a greater extent than by the use of ether.

Benzine does not extract codeia or narcotina; ether removes the former partially, and the latter altogether, from the solution. A practical advantage in the use of benzine is the facility with which it may be separated from the deodorized solution. It is only necessary to pour the mixture on a moistened paper filter, when the watery extract will rapidly pass, admixed with but a trace of benzine, which may be expelled by a comparatively slight application of heat. Economically considered, (its cost being but $\frac{1}{2}$ that of ether,) the advantage of using benzine is important, as its use may exert an influence on the general employment of deodorized tincture of opium. The following formula, involving the use of benzine, is nearly in the language of the Pharmacopœia.

Deodorized Tincture of Opium.

Take of opium, dried, in moderately fine powder, $2\frac{1}{2}$ troy-

ounces; Benzine, sp. gr. .700 to .730, (or of such purity that, when dropped on white paper, and allowed to evaporate spontaneously, leaves no stain;) Alcohol, each half a pint; water a sufficient quantity. Macerate the opium with half a pint of water for 24 hours, and express; then repeat the operation twice with the same quantity of water; mix the expressed liquids, and, having evaporated the mixture to four fluidounces, shake it, when cold, in a bottle, repeatedly, with the benzine; allow it to stand for about eight hours, and separate; then pour the mixture on a paper filter, previously moistened with water. When all of the watery solution has passed, decant the benzine, and wash the filter with a small quantity of water, so as to avoid loss; evaporate the liquid by a gentle heat, until all traces of benzine have disappeared; mix this with twenty fluidounces of water, allow the mixture to stand a few hours, and filter through paper; when the liquid has ceased to pass, add sufficient water through the filter to make the filtered liquid measure a pint and a half; lastly, add the alcohol, and mix them together.

It has long been admitted that aqueous solutions of opium act more favorably on the system than those prepared with alcohol, or than the drug itself. It has also been observed that the narcotic power of the aqueous preparations is not in exact proportion to the drug represented, being somewhat less. How far this diminished sedative effect, and the increased pleasantness of action, is due to the absence of the usual quantity of narcotina, (which is but imperfectly abstracted from opium by water,) or to the removal of the odorous, resinous and fatty principles, has not, so far as I am aware, been satisfactorily determined.

Deodorized tincture of opium, as before intimated, when made with ether, can contain but little narcotina, and only a portion of the codeia of the drug.

A literal interpretation of the officinal name would indicate a faulty nomenclature; for, besides being deprived of odor, at least one important alkaloid is, to a considerable extent, absent from the tincture.

A deodorized preparation, more nearly representing the

alkaloids of opium, and, consequently, better deserving the official *title*, but which, for distinction, I will designate *Purified Tincture of Opium*, may be made as follows:—

The first step of the process being the preparation of *deodorized opium*, which might prove a substitute for the expensive article known as “denarcotized opium.”

Deodorized Opium.

Take of opium, in moderately fine powder, $2\frac{1}{2}$ troyounces; Benzine, sp. gr. .700 to .730, a pint; macerate the opium with half a pint of benzine for twelve hours; separate the benzine by decantation, and repeat the operation again with the same quantity of benzine; then pour it on a paper filter, and, when the liquid has ceased to pass, dry it by means of a gentle heat.

Purified Tincture of Opium.

Take of deodorized opium, the product from $2\frac{1}{2}$ troyounces of powdered opium; alcohol, water, each a pint; proceed as directed for preparing tincture of opium, U. S. P.

I suggest these new preparations with some hesitancy, and would not be understood as recommending untried substitutes for articles of ascertained value.

It is with the desire to further elucidate the therapeutics of this valuable drug that I advance these ideas, hoping, at some future time, to be able to add some experimental results to these theoretical speculations.

Chicago, Illinois, March, 1867.

ON LIQUOR MAGNESIÆ CITRATIS.

BY CHARLES B. ALLAIRE.

(An Inaugural Essay, presented to the Philadelphia College of Pharmacy.)

This favorite remedy has been before the public for the last nineteen years, and at the present day there seems to be no greater uniformity in its preparation than formerly. The processes given in the Pharmacopœias of 1850 and 1860 are adopted by no one, as the inconvenience and impracticability of preparing it extemporaneously is apparent. Commercial carbonate of magnesia, or magnesia alba, is used by some in

making this preparation, while others use the calcined, sometimes freshly-burned, but, in a majority of cases, after it has been standing more or less time, absorbing moisture and carbonic acid from the atmosphere, others using the freshly-precipitated carbonate in the form of a magma, and some employ carbonic acid apparatus in the process. I might mention many methods of preparing it, all of which only tend to confuse matters, and make the solution of various and unknown strengths. For instance, a solution is made by a certain formula, using magnesia from a newly-opened can; the combination takes place without effervescence or other signs of combination than a rise in temperature. Two months later, the solution is made by the same formula, the magnesia in the meantime having been exposed more or less to the action of the surrounding atmosphere; the result is a rapid evolution of gas, showing that the magnesia has absorbed moisture and carbonic acid. It is obvious that the second solution is weaker than the first, containing relatively less magnesia and more citric acid, so that a salt is obtained of unknown composition. A knowledge of these facts has led me to a further investigation of the subject.

Four hundred and fifty grains of citric acid require for saturation $134\frac{66}{101}$ grains of magnesia, ($201 : 60 :: 450 : 134\frac{66}{101}$), or about fourteen grains more than the designated amount in the officinal formula, so that the salt formed in that solution contains nearly three equivalents of base. This, we know, does not furnish a permanent solution; hence, we look for a salt of different composition, with which to make a permanent solution. Prof. Maisch suggests an *acid* salt, the one containing two equivalents of magnesia. This could be very easily obtained, if we knew the composition of the magnesia used; but, as this cannot be done without a special examination, we take the following method of obtaining this two-thirds salt in solution. For one bottle,

Take of Citric acid,	387 grains.
Magnesia or carbonate, q. s.	
Water,	q. s.
Bicarbonate of potassa,	40 grs.
Syr. of citric acid,	f3 jss.

Dissolve 240 grains of the acid in four fluidounces of the water at a heat below the boiling point, (about 166° ;) saturate the solution with the magnesia to be used, adding gradually, putting in an excess, to insure saturation. The residue, if washed and burnt, will not give off water of combination, puff up or char, showing it to be free from any organic salt, while the opposite is frequently the case, if the full equivalent of magnesia be added all at once, or the solution made at too high a temperature.

We now have a salt composed of exactly three equivalents of base and one of acid; to reduce this to an acid salt of the combination 2MgO , HO , C_{12} , H_5 , O_{11} , we add one-half an equivalent of acid, which, in this case, is 120 grains, giving three equivalents of base and one and one-half of acid in combination. This solution, upon evaporation to the consistence of a syrupy liquid, retained its fluidity for several hours, after which it changed into a white, opaque, pasty mass, *readily soluble* again in hot water, which is not the case with the salt containing three equivalents of magnesia to one of acid. This would indicate that the former salt would remain in solution much longer than the latter.

A precipitate was formed in a weak solution of the perfectly neutral salt in less than twenty-four hours after cooling.

To impregnate the solution with sufficient carbonic acid, we take, in addition to the above quantities, the remaining twenty-seven grains of citric acid, and forty grains of bicarbonate of potassa. We prefer this salt of potassa, from which to obtain the carbonic acid, to the carbonate of magnesia, on account of the large amount of foreign matter that is almost always contained in the latter, when prepared in large quantities, and, being set free, makes the solution more or less cloudy, according to the quality of the carbonate of magnesia used.

This solution, when finished, should contain of the salt, 2MgO , HO , C_{12} , H_5 , O_{11} , about 383 grains, by the following equation:— $201 : 214 :: 360 : 383\frac{5}{7}$. I believe the Pharmacopœia aims at a solution to contain 480 grains of the salt in each bottle made by the officinal formula, but experience has shown the solution, as above made, to be quite strong enough.

It is about the same strength as that produced by the formula given in the third edition of Parrish's Pharmacy, which solution has been used as a hydragogue cathartic with success for many years, and is believed to be the one in most general use at the present day.

I have examined a sample, as made by a House in this city, and sold very largely, and found it to be of nearly the same strength as above.

ON THE MODE OF MANUFACTURING SUGAR-COATED PILLS AND GRANULES.

BY HENRY C. ARCHIBALD.

(An Inaugural Essay, presented to the Philadelphia College of Pharmacy.)

The manufacture of sugar-coated pills and granules having of late become a source of great profit and trade to the apothecary, the mode of manufacturing them being kept secret, and the views advanced by some of our leading pharmacutists being wholly inadmissible in preparing them, I have, from long practical experience in their manufacture, determined to make it a subject for an essay. In order to make a pill that shall medicinally come up to the standard of the U. S. Pharmacopœia in therapeutic effects, the greatest care requisite in their manufacture is in the selection of the drugs that enter into their composition; for that purpose it is advisable, when you manufacture them largely, to buy the crude drugs, and from them prepare extracts, powders, &c., so as to insure the reliability of the pills, and to keep up for them the reputation they so richly deserve if properly prepared.

The first step in the process of manufacturing pills is essentially as follows: Sufficient mass is made up at one time to be capable of being divided into 2000 pills, great care being observed to have it of sufficient hardness and tenacity to insure the pills after formation against indentation by pressure and crumbling into irregular pieces; after which the mass is rolled between two boards, the upper with teeth inserted for cutting the mass, the bottom one having a gauge attached to the sides so as to regulate the sides to suit the mass to be sub-

divided previous to rolling them out into pills, and, further, to insure accuracy, each subdivided piece of mass is carefully weighed on well balanced scales, thereby preventing the possibility of any pill being larger than another. The pills are then cut by machinery suited to the size of the pill, and as they are formed roll into large shallow trays filled with some inert powder, which acts not only as an absorbent of the moisture in the pill, but prevents them, while drying, from becoming irregular and losing their shape. I would state that the trays vary in size and are capable of holding from 7 to 20,000 pills when spread evenly over the surface. When filled, the trays are removed and kept in a heated room, the temperature of which is regulated as nearly as possible to from 80 to 90° F.; when of sufficient hardness they are separated from the powder by sifting, and a coating of a solution of warm gelatine is placed over them, and, when thoroughly diffused over the pills, some inert powder is thrown over them, to prevent their adhering together. After the gelatine has thoroughly fixed itself upon the pills, they are thrown into a large circular copper pan, suspended over a fire by means of chains attached to the ceiling, and a thick syrup, made in the proportion of 2 lb av. of sugar to 3xii. of water, is added successively with constant attention until dry, and so on until the pills assume a neat and regular appearance. The time it takes to coat pills properly varies much according to their nature; those composed of resins which become soft by heat it takes a longer time, from the fact that you have to lower the temperature of the fire, and consequently a longer time is required to drive off the water in the syrup; but, from experience, I can safely say that the average time consumed to coat properly a batch of 7,000 pills is from 9 to 10 hours. As thus prepared the sugar crystallizes regularly upon the pill and presents to the eye not only a uniform but a smooth appearance; they are entirely soluble and will keep for an indefinite period without becoming hard, and consequently more or less insoluble in the gastric juices of the stomach. I present herewith some compound cathartic pills, together with granules of morphia made and coated by the above process, and have been on hand about four months.

Granules are made upon the same principle, by incorporating the alkaloids or salts with some inert powder and gum arabic for its adhesiveness, and are dried and coated in the same way. I could still further enlarge upon the above process, but my sole aim is to present in as brief a manner as possible only the chief points in their mode of manufacture.

AROMATIC SULPHURIC ACID.

BY THOMAS N. JAMIESON.

This preparation, made according to the formula as revised in the last edition of the U. S. Pharmacopœia, is still rather inelegant, owing to the copious sediment deposited by the action of the sulphuric acid on the aromatics, more especially the cinnamon, as observed by experiments. Suspecting that the quality of materials used might have something to do with causing the precipitate, two experimental lots were made, one by using pure Ceylon cinnamon, the other with cassiæ lignea, or commercial cassia, and after allowing them to stand for two months, found that the precipitate was almost as copious in one as the other. The tinctures of cinnamon and ginger were then treated with the acid separately, to ascertain which it is that causes the sediment, and I find that, while there is a slight precipitate in the ginger, there is a very large amount in the cinnamon. It then occurred to me that, by substituting oil of cinnamon or cassia for the bark, the precipitate might be avoided, and futhermore, that this preparation might be made extemporaneously by using officinal tincture of ginger and the oil of cassia, instead of the present method of first making a tincture of the aromatics. The preparation made according to the following suggested formula will be found to have all the characteristic properties of the officinal preparation except in color, which is of a light straw :

Formula.

Take of Oil Cinnamon or Cassia,	Twelve minims.
Tinct. Ginger,	Two fluid-ounces.
Alcohol,	Twenty-four fluid-ounces.
Sulphuric acid,	Six troy-ounces.

Add the acid gradually to one-half of the alcohol, allow the liquid to cool; to the other half add the cinnamon and ginger. Mix the liquids and filter. If desirable to have the preparation of the same color as the officinal, this may be accomplished by using either santalum or cudbear, the latter being preferable from its being more permanent in an aqueous solution and of a brighter color.

Chicago, Ill., March, 1867.

REMARKS ON "OSHA" AND "YERBA MANSA" OF NEW MEXICO.

BY JACOB KRUMMECK, (WITH A NOTE BY THE EDITOR.)

A few months since the Editor received a package of roots from Mr. Jacob Krummeck, pharmacist, of Santa Fé, New Mexico, directed to him as Corresponding Secretary of the Philadelphia College of Pharmacy, accompanied by the following letter:—

"Santa Fé, New Mexico, Oct. 14, 1866.

"DEAR SIR:—This will be handed to you by Dr. William R. Cruice, of the military service in this Territory. I think you will find them an interesting subject for study. One is the root of a plant called by the Indians 'Osha,' and in my opinion is a remote species of *Angelica*. This plant grows around springs of fresh water high up in the mountains, in small, low bushes; has a small oval leaf, and a bluish-white flower, which emits a fine aroma, similar to that of vanilla; the leaf and stem are odorless.

"This root is extensively used in Indian medicine, in bronchitic affections, asthma, coughs, etc. The Indians usually chew the root and swallow the juice; sometimes, however, they boil it in water, together with a species of sugar cane which grows here wild. In this latter form they use it in most all diseases of the lungs.

"I have tried its effects on myself, being afflicted with asthma, and have experienced considerable relief from it. I also gave it to an old gentleman in a case of severe chronic cough, and with success. In this case I prepared a syrup as follows: one ounce

of the root, with one pint of water and half a pound of sugar, boiled down to twelve fluid-ounces and strained. Dose, a teaspoonful whenever the cough is troublesome.

"Also in females, of the ages of 17 and 43 respectively, in serious lung affections it proved effective, in the form of syrup, with a grain of morphia added to half a pint of the syrup.

"An ethereal oil is gained by pressing the root.

"Another plant, similar to this in size and shape, bloom and odor, is found along the banks of rivers; but this plant is a strong poison. I tried its effects on a dog, and it proved as powerful as strychnia. I should have sent some, but have been unable to procure it, the Indians having a strong dislike and wholesome fear of it. I will, however, in a short time get some and send it.

"The second root is that of 'Yerba mansa,' (mild herb). This plant grows in marshy bottoms, low and close to the ground, has hardly any stem, oblong leaf, and small yellow-spotted flowers, entirely odorless. The root is gathered in autumn, when the flower has disappeared and the leaf is yellow. This root when dry has, as you will find, the odor of allspice.

"The natives, both Indians and Mexicans, use it in cases of chronic diarrhoea by making a strong tea of it, which is taken hot.

"I have used it with success on adults in cases of that disease, making a tea with an ounce of the root and a pint of boiling water, giving a teacupful, hot, every three hours, and at the same time, to give relief to dryness of the throat, I gave an infusion of one ounce in two pints of water, with an ounce of sugar, cold.

"The same course pursued with children in severe cases of dysentery, where injections and other medicines failed, proved effective in arresting the disease at once.

"I shall continue to forward similar specimens of herbs and plants to you, if agreeable.

"Very respectfully, your obd't. servant,

"JACOB KRUMMECK.

"P. S.—I am sorry to be unable to send you the whole plant—leaf, flower, and stem,—the season being too far advanced; I will send it next season.

J. K."

NOTE BY THE EDITOR.—The root called "osha" is in pieces of various sizes, from a line to an inch in thickness, and from two to twelve inches long, covered, except where broken, by a dark brown epidermis, enclosing a whitish or yellowish-white fibrous interior structure. The large roots consist of the caudex, with the projecting bases of the annual stalks about half an inch in diameter, with the remains of the stem fibres. In the best preserved specimen the tap root is about a foot long, with numerous lateral roots emanating from various portions of the main root, and varying in size, in this respect much like parsley root. At the top of the root, especially about the bases of the stalks, hair-like fibres are numerous attached. The roots are all more or less crushed, as though twisted, by which the epidermis is broken, and the interior fibrous structure exposed. The taste of the root is aromatic and acrid when chewed, like calamus, though different in flavor. When examined closely with a lens the root has a greasy, oily aspect, and by mere handling communicates its odor, which is quite persistent, and not disagreeable, reminding one of Angelica, and due to a large proportion of volatile oil. This was determined by placing 100 grains of the root, reduced to coarse powder, in a pint flask with four ounces of water, adapting a glass Liebig's condensing tube to the flask, and distilling one-half; a milky distillate was obtained, upon which numerous globules of a nearly colorless, strongly odorous, volatile oil floated. This oil has an aromatic, pungent taste. Sulphuric acid destroys it, producing a red substance with an odor like wormseed; it is readily soluble in alcohol and ether. The only specimen of oil of Angelica I had, with which to compare it, was too old and altered to afford a comparison; what evidence it yielded was not in opposition to their close analogy.

Ether percolated through the powdered root and evaporated, yielded a brown fluid consisting almost wholly of volatile and fixed oil amounting to 30 per cent. of the root.

Yerba mansa root consists of a rough cylindrical rhizome or caudex, about an inch long, and three to six lines thick, from which issue a number of spongy, cylindrical, almost fibrous roots, very brittle, and of a fawn color. Its odor in quantity is rather aromatic, its taste pungent and biting, but not very much

so. The structure of the root is but slightly fibrous, a cross section exhibiting the cellular open structure of water plants. Some of the roots have remains of the narrow leaf stalk, but no leaves could be found. The top of the rhizome has a purplish color in many of the specimens, and exhibits the attachments of the leaves; the plant is evidently perennial, and the age may be comparatively indicated by the length of the rhizome. When the latter is broken transversely it exhibits a yellowish ring of what appear to be longitudinal fibres, but on closer examination have not a fibrous structure. A single seed vessel was found.

A decoction of the *mansa* root is colored greenish-black by chloride of iron; the decoction has no acid reaction. The filtered liquid is precipitated abundantly by sub-acetate of lead, and the presence of gummy matter in the root is evinced by its consistence when boiled. Nevertheless, the root is not very astringent, and must owe its virtues in dysentery to other ingredients than tannin. The tincture in alcohol 816 is brownish-yellow, and when added to water an opalescent liquid is produced which is strongly fluorescent. As the author promises the plants, it will be time enough to push the investigation of the properties of these roots when their identity is finally determined, but knowing that my friend Elias Durand was well acquainted with the botany of that region, and might be able to get a clue to the plants from their roots, I submitted them to him and elicited the following reply:

"MY DEAR PROCTER:—It is almost impossible to designate a plant from the roots only, unless very peculiarly characterized. I will, however, hazard an opinion upon the two which you have submitted to me.

"*Yerba mansa*:—A spicate fleshy fruit, with its floral envelopes at the base mixed up with the roots; somewhat resembles that of the *Anamopsis californica*, Nuttall, in Tayl. Ann. Nat. History, (which I have not to compare the character of the fruit.) The floral envelopes at the base of the fruit; the fleshy roots with fusiform rootlets, are also very much like those of the *A. californica*, and the flowers are yellow, like those of that plant.

"If the roots of Osha belong really to the order *Umbelliferae*, it must be to the subclasses *Mulineæ* or *Sarriculeæ*, which have

simple leaves, whilst all the other subclasses have, with few exceptions, compound leaves. Admitting this supposition, I would not be surprised that the plant be an *Eryngium*, an aquatic and subaquatic genus, with white, bluish and blue flowers; with, sometimes, fusiform or tuberous roots, and aromatic or strong-scented flowers and, perhaps, roots, such as *E. aromaticum* of Florida; *E. odoratum* of Portugal, and *E. foetidum* of the West Indies and South America.

E. DURAND."

The genera *Angelia* and *Eryngium* are allied in the same natural order, and the *Eryngium aquaticum*, or button snake root, was long in the secondary list of our Pharmacopœia, and has medical properties analogous to those of "Osha." In regard to "Yerba Mansa" there is strong reason to believe that Mr. Durand's opinion, founded on a seed vessel, will prove correct.

NOTE ON LOZENGE CUTTING.

Philadelphia, March 7th, 1867.

MR. EDITOR :

Sir,—In a recent issue you notice that some of the patrons of the *Journal* complain that it is getting more scientific than practical. I do not think it too scientific myself, yet at the risk of the reverse, that of being more practical than scientific, I offer, if acceptable, the following :

In compounding and dispensing lozenges extemporaneously, as ordered in perscription, &c., where it is desirable to secure neatness in addition to the equal subdivision of a given mass, I have found the following plan to work well : I use a thin brass cylinder of half-inch or more internal diameter, and about two inches long, having a cylindrical piece of hard wood closely fitting the interior, with one end smoothly finished, to coincide with one end of the cylinder, and the other end terminating in a handle. Divide the mass in the usual manner as for pills, then partially withdraw the handle, place the open end of the cylinder over the pill on the tile or counter, hold firmly and press down the handle sufficiently to give the mass the desired form, after which it can readily be removed by slight pressure on the handle. It would be well to have two or more of different sizes.

Yours respectfully,

W. L. TURNER

PHARMACOPŒIA HELVETICA. SCAPHUSIÆ EX OFFICINA BRODTMANNIANA, CHR. FR. STOLTZNER; 1865.

The Swiss Apothecaries' Association was instituted in 1845. As early as 1848 it advocated the introduction of a Swiss Pharmacopœia, to take the place of the numerous pharmacopœias and dispensatories, partly from foreign countries, which were used in the different cantons. The Association finally took the matter in hand, and appointed a committee, who, after five or six years' labor, produced a work which appeared in print under the above title.

The work is printed in large octavo, on good paper, with clear type; the officinal names and the materials used for the preparations with prominent letters, and altogether presents an excellent appearance, creditable at once to its authors and publisher. The language adopted is the Latin, this being the more necessary since three different languages are spoken in different parts of Switzerland; for the same reason, each officinal name is followed by its synonyms in the German, French and Italian languages.

In its general character the work resembles the pharmacopœias of Germany, there being no classification of the material,—all being arranged in alphabetical order, not in groups, as in our pharmacopœia. An enumeration and description of the simple drugs, however, is not contained therein; the text of 278 pages consists of directions for preparing the officinal pharmaceuticals and chemicals, together with a short description of their properties and the reactions of their purity; no process is given for most chemicals which are best and cheapest prepared on the large scale; but either absolute purity or a certain standard quality is required, to be ascertained by tests.

The text is followed by a table occupying five pages, giving the solubility of various acids, salts, alkaloids and other principles, in water, alcohol and ether, at the normal temperature of 17° C., and at or near the boiling point of the solvent. Included in this table we also find a number of compounds which are not enumerated among or used in obtaining the preparations: we mention atropia, cantharidin, caffeina, digitalin, mannit, and a few inorganic salts.

Table II. is a comparison of the degrees of Gay-Lussac's alcoholometer with those of Baumé's and Beck's hydrometers for liquids lighter than water, also of Richter's and Tralles' scale. The first column contains the degrees from 0 to 100; the second, third and fourth columns have reference to Gay-Lussac's alcoholometer, giving the specific gravity and the weight of alcohol and water corresponding with the respective degrees, which, as is well known, express the percentage by measure; the fifth and sixth columns give the specific gravity for the corresponding figures on Baumé's and on Beck's scales, both expressed in three decimals, and the former nearly identical with Pemberton's observations; the two last columns compare the degrees of Richter's with those of Tralles' alcoholometer.

A comparison of the French decimal weight with the Swiss apothecaries' weight, and *vice versa*, is contained in the third table, which is very complete, and useful for converting any given weight, into its correct value of the other system, by simple addition. We learn there that a Swiss pound civil weight is equal to 500 grammes, the medicinal pound = ℥xij = 375 grammes, ℥j = 31.25 grm., 1 gramme = 15.36 grains.

The hydrometers of Baumé and Beck for liquids heavier than water are compared on the fourth table; the scale of the former in three decimals corresponds more closely with that published in Duncan's Edinburgh Dispensatory, 1830.

The fifth table, in two parts, contains a comparison of the Swiss and French measures of length.

1 line	.	.	.	=	.003 metres.
10 lines = 1 inch	.	.	.	=	.030 "
10 inches = 1 foot	.	.	.	=	.800 "
10 feet	.	.	.	=	3.000 "

The sixth table enumerates the poisonous and strong-acting (*heroic*) medicines, in the keeping and dispensing of which the greatest caution is to be observed. It gives in grains and grammes the largest single doses, and also the maximum quantities administered (to adults) in twenty-four hours, which, when exceeded, the physician is required to underline and accompany with this mark (!), without which the pharmacist is not justified

to put up the prescription. The values in the two columns can only be approximate, but since the Swiss pound is equivalent to one-half kilogramme, the discrepancies in the different values ought to be quite insignificant. Taken as a whole the table is correct, but a few discrepancies occur which are too great; we notice the following: Aconitia, maximum single dose $\frac{1}{8}$ gr. = .008 instead of .007 grm.,—a difference of over 12 per cent.; atropia, single dose $\frac{1}{4}$ gr. = .0016, not .001 grm.,—difference over 50 per cent. Evident mistakes are the following: Acidum arseniosum, $\frac{1}{12}$ (not $\frac{1}{2}$) grain = .005 grm.; veratria, $\frac{1}{4}$ grain = .015 (not .005) grm.; zinci chloridum, $\frac{1}{4}$ grain = .015 (not .005) grm.

Following the tables we have one general index of Latin, German, French and Italian names, including the synonyms; and the whole concludes with a list of thirty-five "corrigenda," mostly typical errors, in which, however, those just mentioned are not included.

The European pharmacopœias in general originated with the governments, and are from time to time revised by boards appointed by the same. The origin of the Swiss pharmacopœia is similar to our own, except that the initiatory steps were taken and the work completed entirely by pharmacists. It is therefore truly republican in its nature, being the pharmacial law-book made by those who are to be governed by it.

It will be interesting to American pharmacists to know something of the preparations and processes adopted by our republican brethren in Europe, and we propose to review the more important ones, and compare them with similar ones in our own pharmacopœia; we shall look first at the strictly chemical preparations, and afterwards consider the pharmaceuticals.

It may be remarked here, that all quantities given are meant for weight; the British and American Pharmacopœias, I believe, are the only ones which order the liquids by measure. This rule, however, has been departed from in ordering fixed oils, oleoresins, acids, &c., in the last edition of our own. In directing quantities in *parts* (rarely ounces or grains, and then the equivalent in grammes is always given), the Swiss Pharmacopœia has followed the commendable example of other continental

Pharmacopœias, and thereby adapts itself at once to all parts of Switzerland, in some sections of which the old apothecaries' weight is used, while in others the gramme is employed, perhaps exclusively. The advantage of this is very obvious. We cannot now make preparations according to the British Pharmacopœia, nor are our friends in Great Britain able to make preparations of our Pharmacopœia, in which liquids are employed, without going to the trouble of calculating the weights and measures. But the direction of *all* quantities in *parts by weight* enables us to produce exactly the same preparations, whether we work with grammes, troy, avoirdupois, Nuremberg, or any other system of weights.

Acidum aceticum* has a specific gravity of 1.040 at 15° C. ; the dilute acetic acid is made with one part of the former and five of distilled water.

Acidum hydrochloricum and nitricum are distilled from table salt and purified saltpetre respectively, with crude sulphuric acid. These pure acids have the spec. grav. = 1.120 and 1.20, of the dilute acids = 1.06 and 1.09 ; besides these, the crude acids are likewise officinal.

Acidum sulfuricum is made by rectifying the crude acids from a bath of ashes ; it is free from bases, and from muriatic and nitric acids.

Dilute sulphuric acid has 1.11 spec. grav. The crude acid, diluted with ten parts of water, may yield a slight precipitate with sulphuretted hydrogen ("hydrosulfur," a short and very appropriate name), but if this is wholly or in part dissolved by ammonia, and this solution precipitated in yellow flocks by muriatic acid (arsenic), the acid is unfit for use.

Acidum phosphoricum, spec. grav. 1.130, is made in glass retorts ; after the phosphorus has been oxidized and the nitric acid entirely expelled, the arsenic likely to be present is removed by sulphuretted hydrogen. Our Pharmacopœia has no such provision, and does not even direct the phosphorus to be free from this frequent impurity.

Acidum hydrocyanicum contains two per cent. by weight ; the

* We give the names of all preparations as officinal in the Swiss Pharmacopœia.

distillate from two parts ferrocyanide of potassium is collected in eight parts alcohol, and subsequently diluted with distilled water; the drops of this acid are, therefore, rather smaller than of our preparation.

Æther is purchased from chemical manufactories and rectified. The danger connected therewith is not as great as to prepare it in glass retorts, which our Pharmacopœia directs and which nobody follows.

Æther aceticus. Four parts exsiccated acetate of soda, four crude sulphuric acid and three alcohol, are distilled to obtain four parts, which are agitated with the same weight of water and sufficient carbonate of magnesia; the ether is then separated by adding two parts chloride of sodium, and rectified.

Alcohol absolutus, spec. grav. 81 at 15° C., is scarcely stronger than our alcohol fortius 817.

Alumen ustum. Five parts alum are heated until three parts remain; this is not entirely exsiccated,—sixteen to nine parts is better, as directed by the U. S. P.

Ammonium chloratum is sal ammoniac purified by recrystallization, with the addition of ammonia to remove iron. The purified salt only ought to be dispensed for internal use; our Pharmacopœia knows the crude only, notwithstanding its frequent use as an expectorant.

Ammonium chloratum ferratum consists of twelve parts sal ammoniac and one crystallized sesqui-chloride of iron, dissolved and evaporated.

Aqua chlori is prepared by absorbing the gas in its passage through several flasks half filled with water; the uncondensed chlorine is passed into a solution of protochloride of iron; one ounce contains about three grains chlorine, and oxidizes twenty grains protosulphate of iron.

Argentum nitricum is made from pure silver and acid, the solution filtered through gun cotton, and the crystals heated in a porcelain capsule short of fusion, to expel the excess of nitric acid. We doubt the possibility of ever getting rid of all this excess in the directed way, because the crystals retain some mother liquor mechanically enclosed, which cannot be removed except by fusion. It would have been much better to granulate the

salt, continue the heat until the excess of acid is expelled, and, if preferred in crystallized form, re-dissolve in distilled water and crystallize. The process of our own Pharmacopœia will yield a pure salt without loss of silver, if the latter is used in a nearly pure state, the nitrate of other metals which are likely to be present being decomposed by fusion ; but the filtration through paper of the solution of the pure salt is objectionable, since the resulting crystals will be very easily blackened on exposure; powdered glass or gun cotton ought to be substituted. Our Pharmacopœia is, moreover, inconsistent in directing absolutely pure metallic silver and nitric acid, and assuming the presence of other metals in preparing the nitrate.

(To be continued.)

ON THE KINDS OF RHUBARB AT PRESENT IN RUSSIAN COMMERCE.

BY ADOLPH FERO, OF MOSCOW.

The supply of rhubarb is at present a most important question to the Russian apothecary. After having been compelled for centuries to fill our wants from the magazines of the government, and there obtaining only the best quality, the so-called *Radix Rhei Moscovitici*, brought by Bucharian merchants to Kiachta and there examined and bartered by the crown, we see, for several years past, this traffic cut off, the supplies of the government completely exhausted and yet no prospect for re-establishing that trade.

Although the prohibition to obtain rhubarb from foreign countries has not been rescinded,* this measure will sooner or later become imperative, and the question will then arise, what new kinds of rhubarb may be obtainable by us and what is their comparative value, and how do they compare with the crown rhubarb, as formerly obtained?

Having been ordered by the government to Kiachta and employed there as pharmacist at the inspecting office for rhubarb, I had frequent occasion to study the conditions of the trade in rhubarb and to examine the kinds received. Since that time my

* Apothecaries must even now obtain rhubarb from other sources.

interest in this subject has been kept alive, and this is my motive for entering more minutely into this subject. Through the want of crown rhubarb, several kinds have lately appeared in our commerce which are either entirely new or at least do not correspond with the older samples which had received their names outside of Russia. This latter is especially the case with *Radix Rhei Bucharici*, under which name the works on pharmacognosy embrace drugs differing very materially from each other.

For comparing the different kinds of commerce, the so-called crown rhubarb (Kronrhabarber) may be used as the basis because it was obtained from the first hands,* was accepted only when possessing certain qualities, had been kept and transported with the utmost care, and because medical authorities regarded it as the most effective. The following is contained in the instructions which I received :

“In accepting rhubarb from the Bucharians, it must be strictly observed that it possesses all the requisite qualities for medicinal purposes ; large, well-selected and recently collected roots only must be accepted. Accidental or intentional admixtures of other kinds of rhubarb must be carefully picked out. The cuttings of worm-eaten, spongy or rotten spots and all other offal obtained in cleaning rhubarb, must, according to the contract with the Chinese government, be burned in presence of the Bucharians.”

Unfortunately we have still no knowledge of the true source of this rhubarb, chiefly because the Bucharians could by no means be induced to furnish dried specimens of the plant, or even roots entirely unpeeled or uncleaned.

What I could learn from them in regard to collection, locality and growth, does not reach beyond the accounts of von Schröders, contained in his historical essay on the rhubarb trade in Russia, (Pharmac. Zeitschr. f. Russl. ii., No. 21, 22.) (See also Hallier's Beiträge zur Geschichte des Rhabarber in Arch. d. Pharm. cxii., p. 67.) I will merely point out those facts which are important in establishing the principal kinds, to which I may still count the Moscovitic rhubarb as the starting point of my examinations.

* The Chinese government had given the Bucharians the exclusive monopoly for the sale of this rhubarb.

Schröders states that the trade of the Russian government with rhubarb was organized between 1687 and 1698; in the latter year it was decreed to purchase for the government exclusively all rhubarb brought by caravans of Bucharian merchants to the Russian frontier. After the diplomatic relations between Russia and China had become more intimate, the latter government favored this trade by making the exclusive monopoly of the Bucharians to sell the true rhubarb conditional, compelling them to sell this root *only* to the Russian government. Subsequently this trade was regulated by contract. The Bucharians could supply the demand only in very rare cases, and the concession made in later years by the Russian government that, after satisfying the wants of the crown, any excess might be disposed of, after the usual inspection, to private parties, was rarely if ever carried out as far as the Moscovitic rhubarb is concerned.

This fact of the incapability of obtaining a sufficient supply through the Bucharians, induced the Russian government to search for other sources in the accessible parts of China and to experiment with the culture of rhubarb upon Russian soil; in this manner a trade was once opened at other points on the frontier of China and for some time even rhubarb grown in Siberia was employed.

Travellers have never penetrated to the southern slope of Thibet, and it is therefore improbable that the rhubarb, directly or indirectly obtained from them, was from the true place. The importation of rhubarb still continues and furnishes one of those kinds which will hereafter be described.

During the present century the commercial intercourse between China and England, via the East Indies, has assumed a continually increased importance, and the commerce of nearly all Europe now draws its supply of Chinese products via England, among them rhubarb. In regard to the locality where the rhubarb exported from Canton is cultivated, the southern provinces are pointed out, which are accessible to explorations from the East Indies in the same manner as the Russians established connections in the North. But since the English have never penetrated to the rhubarb districts pointed out before, and since the Bucharians roaming through that country do not come to

the English at the borders of the East Indies, the latter, like Russia now, do not obtain their rhubarb from those districts.

Of late years a continually increasing trade in rhubarb has sprung up from Bucharia to Russia, the root being probably brought by Tartarian merchants to the Caspian Sea and from thence up the Wolga to the fair at Nishni-Nowgorod; but nothing definite could be ascertained, notwithstanding the most diligent inquiries. From Nishni-Nowgorod this rhubarb is transported, chiefly by Jews, partly to Moscow and St. Petersburg, for the greatest part to White-Russia and Poland, even to Galicia and occasionally to Vienna.

As observed before, the descriptions of this root as given by Grassmann, Pereira and others agree very little amongst themselves and with the present commercial kind; its appearance, however, is sufficient to refute the assumption that it was grown in the same soil as the true Moscovitic; and, indeed, the information which we are enabled to obtain here in Russia points to its cultivation in Bucharia.

Above, I believe, I have given the points which would suggest a ready nomenclature for the commercial varieties of rhubarb root. Starting from the view that the former Russian crown rhubarb grows in a rather confined locality, accessible only to the Bucharrians, and that its importation has entirely ceased, I propose to retain for it the name of MOSCOVITIC or *crown rhubarb*, by which it has been known for a long time. The name of *North-Chinese rhubarb* is proposed for the rhubarb which is exported from other parts of China northwardly to Siberia. (The term "Siberian rhubarb" ought to be retained for that root which was for some time cultivated in Siberia.) *South-Chinese* or *Canton rhubarb* would then be applied to what is exported by way of the East Indies, and the root which comes from Bucharia to the Caspian Sea and to Nishni-Nowgorod would have to be called *Bucharrian rhubarb*. This latter term would have to be discarded as synonymous with Moscovitic rhubarb, in which connection it was formerly sometimes used, because the true crown rhubarb was obtained through Bucharrian merchants.

The following contains the characteristics of these different kinds:

1. *Moscovitic Rhubarb*. *—Caudex from 9 ounces to 6 drachms, packed in chests of 200 lbs. each; partly entire, or divided into two halves by one longitudinal or transverse cut, or rarely the larger roots divided into four parts by one length and one cross-cut, this latter at one time highly valued in England under the name of hoof rhubarb. Color on the surface purely ochre yellow. They are mostly perforated by a hole frequently containing traces of the rope by which they were suspended while drying; most pieces are penetrated to about the centre by what is called a borehole made by the examiner with a knife for the purpose of examining the roots for bad spots. The roots are entirely peeled and free from bark and cambium. The surface is smooth and covered with an extremely fine powder, evidently from the attrition of the dried pieces during transportation. The average size of the uncut roots is 6 inches in length and $2\frac{1}{4}$ inches greatest thickness; their shape is oblong-oval. The texture is compact, the so-called pulverulent ring (of Berg) is little or not observable; inside and outside of the same, the several radiating circles are regularly formed, often several such systems running together; the medullary rays are usually present in more than two rows beside and above each other and the veins interlacing each other on the surface in distinct rhombic forms.

The cells are roundish oval, tinged with a brownish red, yellowish red, greyish brown or bluish grey coloring matter, which is readily soluble in water, less and more slowly in glycerin. In specimens richest in oxalate of lime, the amount of starch is very insignificant in the centre, somewhat larger toward the circumference. The clusters of oxalate of lime are radiating. Intermixed are found a small number of pieces approaching the North- and South-Chinese rhubarb.

2. *North-Chinese Rhubarb* comes to Russia by several routes,

* *Russian* or *Turkey rhubarb* is the synonymous term for this kind in the United States. Most rhubarbs, however, formerly sold in our markets under this name, at least as far as I had occasion to see and examine, were base imitations, some consisting of selected, occasionally even common Chinese rhubarb, at other times, in my judgment, merely of English rhubarb. The same is true of what is even now still offered here, after Russian Rhubarb has for several years disappeared from European commerce and is rarely met with except in collections. J. M. M.

chiefly through Siberia to the fair at Nishni-Nowgorod, since 1863 imported to Moscow by the firm of Kaplan & Co. Packed in chests and barrels up to 200 lbs. in weight.

Pieces weighing from one to seven ounces, mostly uncut, or cleft merely longitudinally; shape resembling the Moscovitic. Entirely or partly mundified, but the latter peeled superficially after drying. Nearly all with holes made on drying, but rarely bore-holes, and these made only in imitation of the Moscovitic root. Color the same as in former. Surface mostly smooth, frequently bearing evidence that the powder was not fixed by attrition during transportation, but added artificially. Mean length $2\frac{1}{4}$ inches, greatest thickness $1\frac{1}{4}$ inches. Texture more or less loose, frequently porous; pulverulent ring strongly marked; radiating circles indistinct, within the ring these radiating systems are very rarely circularly arranged, outside the ring still more rarely indicated; but here the medullary rays radiate very uniformly; these rays formed mostly of five rows of cells beside, and of five and more rows above each other; the interlacing of the veins on the surface is therefore far less distinctly rhombic. Cells of medullary rays elongated, rectangular, their coloring matter mostly yellowish or reddish brown. Starch in the centre and toward the circumference more abundant, oxalate of lime in smaller quantity; clusters of the same flat radiating.

3. *South-Chinese Rhubarb* enters commerce usually from Canton in chests of 130 lbs., ($147\frac{1}{2}$ lbs. Russ.) lined with tinned sheet-iron. Partly peeled, partly unpeeled, mostly uncleft, with very small bore-hole, frequently wanting and not made with a knife as was done at Kiachta. Surface generally covered with little powder. Mean weight 3 oz., larger pieces as much as 7 oz., smaller about 1 oz. Mean length 3 inches, greatest thickness $2\frac{1}{4}$ inches. More compact than former and rarely porous. Color darker, externally as well as inside. Microscopic texture and appearance under the magnifier similar to former, but more compact, the veins darker to greyish brown. Starch granules in some specimens smaller than in former.

I do not consider here the rarer and inferior kinds, particularly the so-called cylindrical Canton rhubarb (stick rhubarb), which appears to be cultivated in the East Indies, probably a kind of

rhapontic root, nor the so-called red Canton rhubarb, which does not appear ever to become an important commercial variety.

4. *Bucharian Rhubarb*.—Besides the facts related above nothing can be stated regarding the manner in which it enters commerce, since it is mostly offered in small quantities and by pedlers; but all its qualities characterize it pretty well. From the desire to impart to it a resemblance to the Moscovitic rhubarb, the perforations for suspending the root while drying are met with, and also frequently imitations of the bore-holes, the former being in many instances made after drying. We have mundified and so-called half mundified kinds, the former frequently liberated from the cambium very carefully, and at the same time most economically, often by means of a file; the latter after drying usually not further treated with the knife and therefore with numerous longitudinal wrinkles on the surface. In most cases the dimensions of the roots are greater than in the preceding kinds, and they are cleft longitudinally into two halves; the exposed cut having contracted, on drying, to a somewhat convex (concave?) shape, this might be called the conchoidal form of rhubarb. Mean length $3\frac{1}{2}$ inches, width $2\frac{1}{2}$, thickness $1\frac{1}{2}$ inches; mean weight of a whole root 8 oz. The surface is usually intentionally sprinkled with powdered rhubarb, sometimes also with other yellow powders, like turmeric; sometimes it may be observed that the specimens have been previously wetted to make the powder adhere better.

In compactness this rhubarb resembles the South-Chinese; its texture is the most fibrous and woody of all varieties. The shape of the cells of the medullary rays and of the clusters of oxalate of lime resembles that of the North and South Chinese rhubarbs; the starch granules show no important difference from those of the Moscovitic rhubarb, with which it also agrees in the indication of several radiating circles within the pulverulent ring, which, however, is more marked. These radiating systems are wanting outside of the ring like in the Chinese, and the medullary rays radiate very accurately, becoming gradually narrower towards the circumference, and their color is in most cases darker than in the South Chinese Rhubarb.—*Pharmaceut. Zeitschr. für Russland*, 1866, Novb. 473—481. J. M. M.

GLEANINGS.

By the Editor.

On Oil of Sesame.—M. Fluckiger (*Schweitzer, Woch. f. Pharm.*) has made an examination of the seed yielding this oil (*sesamum orientale*) which has been introduced into the Swiss Pharmacopœia.

Deprived of its perisperm the seed appears to be saturated with oil; on removing this with ether, the residue consists of proteic granules that are colored yellow by iodine, dissolved by hot potassa, and are colored violet by Barreswill's liquid.

They contain also 38 per cent. of gum soluble in water, and when the seed are beaten with water they form an emulsion which is acrid when old seed are used.

The seed lose $4\frac{1}{2}$ per cent when dried in the air, and give 6 per cent. of ashes, containing traces of phosphoric acid. The black seed give 8 per cent. of ashes; further, the yellow seed contain 3 per cent. of nitrogen and 56 per cent. of oil.

Oil of sesame is not a drying oil. Its specific gravity .919 at 55 Fahr., and congeals at 21° Fahr.

The author says, this, like apricot oil, is used to adulterate the oils of olive and almonds. It is detected by Behren's reagent, (equal parts of sulphuric and nitric acids), which by contact produces a green coloration with pure oil of sesame, reddens ground nut oil, and only yellow pure olive oil. The observation must be made immediately on contact.—*Jour. de Pharm. Feb., 1867.*

Bleaching Gum.—M. Picciotto recommends to dissolve the gum, 6 parts in 15 of water, strain through linen, and add recently precipitated gelatinized alumina; it forms a thick pap. The coloring matter is fixed by the alumina so completely that when the mixture is thrown on a strainer the mucilage escapes colorless, and is then carefully evaporated.

Hyoscyamia.—The Druggists' Circular for March states, without giving its authority, that the alkaloid of henbane has been obtained by Kletinsky in the form of crystals, former attempts having only succeeded in producing an amorphous resinoid body. The alkaloid is best procured from the fresh seed by digesting

them for twenty-four hours in dilute alcohol with 2 per cent. of sulphuric acid at 120° Fahr., expressing, filtering and supersaturating with caustic baryta. The precipitate is separated by a filter, the filtrate is then treated with sulphuric acid in slight excess, and distilled to recover the alcohol. The residue is then accurately neutralized with carbonate of potassa and shaken with ether, which removes the alkaloid. The ethereal extract obtained from this is made into a pulp, with 1 part of powdered clay, 1 of powdered charcoal and 2 of ivory-black, which is dried, spontaneously powdered and extracted by ether. This ethereal solution, by evaporation, leaves a white substance which is carefully fused by a moderate heat and crystallized from alcohol. From the gold salt the formula $C_{20}H_{17}NO_2$ has been calculated.

Eau de Pagliari.—M. Meyer (Bull. Soc. Pharm. Brux.) regards the manipulation of the original receipt as empirical, which consists in boiling during six hours, in an earthen vessel, 6 drachms of benzoin in powder, 12 drachms of alum and 15 ounces of water, observing to agitate frequently, and replace the liquid as it evaporates by boiling water. The filtered liquid should be preserved in closed bottles. He proposes to modify the process, save time and improve the preparation, as follows :

Take benzoin in tears 90 grains ; alcohol of 90 per cent. 225 grains, dissolve, and add water 10 fluid ounces, alum 450 grains. Mix and boil until the liquid becomes clear ; filter after cooling. This liquid should be of specific gravity 6° of Baumé's hydrometer for salts.

How to select Indian Ink.—Indian ink for drawings, according to the Editor of the *Franklin Institute Journal*, is best tested in the following manner :—Rub off a portion on a porcelain surface with water to the proper consistency, then with a ruler draw a number of lines of varying thickness on a piece of drawing paper. When dry, brush over with water freely. If *good* the ink lines will keep sharp and clear, whilst poor ink will run or spread sideways. The best comes from Japan. A piece of slate is better than glass for rubbing it down to the condition fit for use.

ETHER VERSUS CHLOROFORM.

To the Editor of the Medical Record.

Sir—The death by chloroform which recently took place at Bellevue Hospital, gives a sad interest to the question of surgical anæsthesia. The repeated accidents which have occurred in May, 1866, in Berlin, June, 1866, in Philadelphia, February, 1867, in New York, have naturally enough staggered the faith of many surgeons in the great anæsthetic.

Allow me, sir, to refresh the minds of your readers with reference to the past records of chloroform. As early as 1853, Baudens acknowledged eighty deaths, and A. Forzet found eighty-five. In 1859 Barrier de Lyon ascertained that there had been above two hundred deaths. Diday collected from that date to 1864, twenty-one cases registered in England, leaving at least as many which were unrecorded. If there was another drug instrumental in the destruction of so many lives, would it not be ejected from the *materia medica*? True, the fault has been put on the impurity of the article employed; but how often has chloroform been used in case of accident, in its purity, as in the instance of Bellevue; showing that it need not borrow its toxic properties from heterogeneous substances. Hence, from 1847, the date of the beginning of the use of anæsthesia, surgeons have been divided into two classes, the chloroformists and etherists; and though the first-named had, at first, the advantage, their rivals have steadily persevered, patient and unrelenting, in their efforts to demonstrate the general efficiency and the absolute safety of ether.

In 1848, Cantu remarked that half of his chloroformized frogs died, and hardly any of his etherized ones. Sedillor admits, at the same date, that when he stops giving ether, anæsthesia may continue, but in no case become aggravated. Not so with chloroform; when discontinued after insensibility is produced, its action is continued, its symptoms may in some instances cause death. This circumstance constitutes the most marked difference between the anæsthetic rivals.

The few men who supported this view against triumphant

chloroformists found an early and eminent representative in T. E. Petrequin, chief-surgeon of the Hotel de Lyon. For nearly twenty years he has banished chloroform and used ether in that hospital, the largest in France, where from fourteen to fifteen thousand patients are treated annually, and where more operations are performed than in any other. From this telling experience, Petrequin Diday, and in fact l'Ecole de Lyon, asserts that pure ether has accomplished in their hands, without accident, those services which chloroform has rendered elsewhere at a cost of several hundred lives. Is not this question worthy of further study?

Yours, etc.,

E. SEGUIN, M. D.

—*The Medical Record.*

OZONE PRODUCED BY PLANTS.

Professor Daubeny of Oxford has contributed to the Journal of the Chemical Society, for January last, an interesting article, giving the details of a series of careful experiments, which go to prove that green foliage, in assimilating carbonic acid, water, &c., liberates a part of the oxygen in the form of ozone. After his experiments were made, Dr. Daubeny found that Kosmann of Strasburg had reached the same conclusion, but through less refined experiments. Referring to the first paper he ever communicated to a scientific society, that published in the Philosophical Transactions for 1834, on the evolution of oxygen gas by plants in the day-time, Dr. Daubeny concludes: "Should I now have established to the satisfaction of the scientific world, that these same green parts of plants, at the very time they are emitting oxygen, convert a portion of it into ozone, I might hope that these researches of my later years will serve appropriately to wind up those undertaken in my younger ones, by showing that vegetable life acts as the appointed instrument for counteracting the injurious effects of the animal creation upon the air we breathe, not merely by restoring to it the oxygen which the latter had consumed, but also by removing, through the agency of the ozone it generates, those noxious effluvia which are en-

gendered by the various processes of putrefaction and decay,"—engendered, we may add, as much by decaying vegetable as by animal matter.—A. G.—*Amer. Jour. of Science and Arts*, March, 1867.

ON NATIVE CRYSTALLIZED TERPIN.

BY S. W. JOHNSON.

In October, 1866, the writer received from Wm. M. Gabb, Esq., of the Geological Survey of California, a small quantity of crystals found in "cavities near the core of a semi-decomposed pine stump that was buried three or four feet below the surface in Shasta Co., California." The crystals were discovered by Mr. Voy of San Francisco.

At the request of Mr. Gabb I have examined these crystals, which, in the sample received, were still partly adhering to a fragment of pine, where they were associated with another crystalline substance of a yellowish color and resinous aspect.

The crystals were colorless and transparent, the largest individual was three-eighths of an inch long, one eighth of an inch wide and one-sixteenth of an inch thick. They were of brilliant lustre and well terminated at the free ends. From their occurring in buried pine wood and from their general appearance, it was at once suspected they might be identified with crystallized terpin. Their faint resinous taste and odor, not to be distinguished from that of the artificial substance, confirmed this view.

To obtain full information regarding the crystallometrical characters of the substance, I applied to my friend, Mr. John M. Blake, of New Haven, to make a comparison between the native crystals and those of artificial preparation from the chemical cabinet of the Sheffield Scientific School. Some of the highly interesting results of these investigations are communicated by Mr. Blake in the paper that follows, and leave no doubt of the identity of the two substances, although their crystals are not developed in the same manner, and exhibit other physical differ-

ences which, as he states, disappear when both are recrystallized from the same solvent.*

After Mr. Blake had finished his examinations, a combustion was made on nearly the whole available substance. The hydrogen determination was lost by the fracture of the CaCl tube, but the estimation of carbon fully confirmed the conclusions previously arrived at. The combustion was effected in a tube partly filled with oxyd of copper and in a stream of oxygen, the substance itself being placed in a tray of platinum. On application of heat it swelled and afterwards vaporized completely, without blackening and without leaving a weighable residuc. On the cold parts of the tube silky crystals of anhydrous terpin condensed. This deportment is characteristic of terpin.

The amount of substance burned was but 0.0975 grm. The increase in weight of the potash bulbs and tube was 0.225 grm. This gives carbon 62.93 *per cent.* The calculated quantity is 63.16 *per cent.*

The substance is therefore hydrated terpin or crystallized turpentine camphor $C_{20}H_{30}O_4 + 2aq$. Perhaps we should say it is one of the terpins, since, according to Berthelot, the different oils of turpentine, on hydration, yield crystals of different degrees of solubility.

The formation of this substance in the buried tree presents no difficulties, since we know on the authority of Dumas, Deville and others, that oil of turpentine in contact with water, combines with the latter in absence of acids or other powerful agents of chemical change.

Prof. Brewer, who is familiar with the timber of California, is of the opinion that the wood to which the crystals were attached is that of a pitch pine, *Pinus ponderosa*.

This appears to be the first recorded instance of the occurrence of crystallized terpin, native.—*Amer. Jour. of Science and Arts*, March, 1867.

* Mr. Blake has measured and figured both the native and artificial crystals and has in reserve some other valuable observations which it is to be hoped he will shortly publish.—S. W. J.

ON THE APPLICATION OF DISINFECTANTS IN ARRESTING THE SPREAD OF THE CATTLE PLAGUE.

Report to Her Majesty's Commissioners.

BY WILLIAM CROOKES, F.R.S.

(Continued from page 439, vol. xxxviii.)

37. It became now a matter of considerable interest to ascertain in what way carbolic acid acted in arresting decomposition, and the following experiments were made, with the object of clearing up this point:—

XIII. Albumen was mixed with four times its bulk of water, and a one per cent. solution of pure carbolic acid was added to it. No change took place for the first few minutes, but after a little time a white cloudiness was formed, which gradually collected together into a coagulum. On separating this, and exposing it freely to the air, it entirely resisted putrefactive decomposition. The solution strained from the coagulum still contained carbolic acid and uncoagulated albumen.

XIV. The same experiment was repeated with pure cresylic acid. This acid has still less affinity for albumen, the mixed solutions remaining clear for nearly half-an-hour.

It is evident, therefore, that the tar acids do not owe their special action to their coagulating powers on albumen, for the last two experiments show, contrary to the generally received opinion, that their affinity for this body is but slight.

XV. A few drops of carbolic acid, added to half a pint of sugar syrup and yeast in full action, immediately put a stop to the fermentation.

XVI. Fresh brewer's yeast was washed with the solution of one per cent. of carbolic acid, and then with water. Its power of inducing fermentation in a solution of sugar was entirely destroyed, although no perceptible change in the appearance of the yeast cells could be detected under the microscope. This experiment was repeated several times, and always with the same result, although when the yeast was simply washed in water it readily induced fermentation.

The odor of carbolic acid adhered most pertinaciously to the

yeast, and by no ordinary amount of washing and exposure to the air could it be removed.

XVII. Strychnine was added to a mixture of yeast and sugar solution in full fermentation. No visible effect was produced, the evolution of carbonic acid continuing as brisk as before.

The above experiments, some of which were performed by my friend Mr. Spiller, prove conclusively that carbolic acid has a special action on the fermentation induced by organized matter; it not only arrests it instantly when in progress, but it prevents the development of future fermentation.

38. The action of the tar acids was now examined on certain chemical bodies, which are supposed to act by fermentation, in order to see if they were influenced in the same manner.

XVIII. A solution of diastase (infusion of malt) was mixed with thick starch paste, and a one per cent. solution of carbolic acid. On gently heating for a short time, the starch was converted into dextrine, as completely as if no carbolic acid had been present.

XIX. Amygdalin was mixed with synaptase (emulsion of sweet almonds) in the presence of carbolic acid. The formation of the essential oil took place with apparently the same readiness as if carbolic acid had been absent.*

The foregoing results show that carbolic acid has no action on purely chemical ferments. These consist of definite nitrogenous compounds acting simply by chemical affinity, and therefore ought not to be classed with true ferments, which are living bodies. It therefore appears that carbolic acid acts by attacking vitality in some mysterious way, and where an effect is merely due to so-called catalytic force, it exerts no interfering action.

39. The action of carbolic acid on vitality was then tested in other ways:—

XX. Cheese mites were immersed in water, where they lived for several hours. A few drops of a solution of carbolic acid containing 1 per cent. added to the liquid, killed them instantly.

XXI. An aqueous solution of carbolic acid was added to water

* These last two experiments are confirmatory of a statement in Dr. Lemaire's work "*Sur l'Acide Phénique*."

in which a small fish was swimming. It proved fatal in a few minutes.

XXII. A very minute quantity of a weak solution of carbolic acid was added, under the microscope, to water containing various infusoria, such as bacteria, vibrios, spirilla, amœbæa, monads, euglenæa, paramecia, rotifera, and vorticellæ. The acid proved instantly fatal, arresting the movements of the animalcules at once.

These animalcules are the almost invariable accompaniments of putrefactive fermentation. The above experiment has been tried with putrid blood, sour paste and decayed cheese, and in every instance the destruction of vitality and the arrest of putrefaction have been simultaneous.

XXIII. Caterpillars, beetles, crickets, fleas, moths and gnats were covered with a glass, the inside of which was smeared with carbolic acid. The vapor proved quickly fatal. It allays the pain caused by the stings of bees, wasps, hornets, and gnats, if applied pure, or in strong solution, to the wounded part.

I find it recorded by Dr. Lemaire and other observers that carbolic acid vapor will also kill flies, ants and their eggs, lice, bugs, ticks, acari, musquitos, aphides, butterflies, earwigs, woodlice, cockchafers, centipedes, and other insects of this size; its vapor, however, does not appear to be strong enough to act injuriously on animals larger than mice. When such animals are killed with it, their bodies dry up in the air, and resist putrefaction for some time.

40. From the intense aversion shown by all insects to the odor of carbolic acid, it is probable that the plentiful use of this agent would effectually preserve cattle from those terrible scourges met with in certain parts of Africa, the zimb and tsetse fly. The effects following the bite of the latter have been described to me as being almost identical with the symptoms of cattle plague.

M. Lucien Baird, in speaking of the invasions of the large ants of Mexico, says that when one of their battalions threatens his house, he sprinkles a little carbolic acid in front of it. The army immediately makes a detour to avoid the obstacle.

When an animal is killed by the injection of a saturated

aqueous solution of carbolic acid into its veins, circulation is instantly arrested, the blood is not coagulated, and no alteration, either in the shape or the appearance of the globules, is detected under the microscope. The only apparent change consists in the immobility of the globules.

41. In the *Annales de Chimie et de Physique* for October last, there is a letter from M. Béchamp to M. Dumas, in which it is said that creosote appears to be the agent which most strongly opposes the development of organic ferments, but that it does not interfere with the living ferments or animalcules when they are once developed. This assertion is in direct opposition to all my experiments, about the accuracy of which I have no doubt whatever, having submitted them to repeated tests. The powerful action which carbolic acid exerts on the phenomena of life is the most remarkable property which it possesses. It may be looked upon as the test proper for distinguishing vital from purely physical phenomena, and in most cases its action is characterized by the certainty and definiteness of a chemical re-agent. In the presence of carbolic acid the development of embryotic life is impossible, and before its powerful influence all minute forms of animal life must inevitably perish.

42. It may be considered as definitely proved that the vapor of carbolic acid, in the atmosphere, exerts a special selective power on all minute organisms possessing life. If the contagious matter of cattle plague is possessed of organic vitality, as must be now admitted, it will be destroyed, beyond the possibility of revival, when brought into contact with the vapor. French experimentalists have repeatedly tested the influence of carbolic acid on vaccine lymph. They have employed lymph both pure and mixed with a trace of carbolic acid. The vaccination with pure lymph was followed by the usual results, but in no single instance was any effect produced by the lymph containing carbolic acid.

43. The following experiment tends to show a similarity between the action of vaccine virus and that of the cattle plague :

XXIV. The air from a close, highly infected shed (57), containing animals in the last stage of the disease, was drawn through glass tubes containing tufts of cotton wool, in the expect-

tation that some of the virus cells, supposed to be floating about in the atmosphere, would be arrested by the wool.

The suction was continued for ten minutes. One piece of the infected wool was then exposed for half an hour to the vapor of carbolic acid. Two apparently healthy calves were selected, and an incision being made beneath the skin, these pieces of wool were respectively inserted in each. The animal thus inoculated with the infected wool, which had been exposed to carbolic acid, remained perfectly well, but the other animal took the disease, and died in a few days.

I place this upon record, although I do not attach much importance to it, as the experiment was made at a farm where the plague was raging; and it is quite possible that the calf which died did not take the disease from the wool. Unfortunately, time would not permit me to verify this experiment so as to place its results beyond doubt. It is likewise desirable to inoculate with the virus itself, collected from the eyes, &c., of diseased animals, mixed with different quantities of carbolic acid. There can be but little doubt that the issue would prove satisfactory.

44. I first employed carbolic acid on a large scale early in December last. Considerable experience suggested to me the best way of proceeding, and I consider that the results have proved that my views were correct. A detailed account of the various experiments is given in the next part.

I had two objects in view; firstly, to apply the energetic disinfecting powers of sulphurous acid for the purpose of purifying the cattle sheds two or three times a week; and secondly, to trust to carbolic acid as a permanent means of protecting the animals from extraneous infection. Sulphur fumigation and carbolic acid agree very well together, and somewhat assist each other's action; whereas oxidizing disinfectants, used either with carbolic acid or sulphurous acid, are inoperative; the energies which should be directed to the destruction of infection being exhausted in neutralizing each other. When dealing with such an overwhelming amount of putrefying and putrescible organic matter as is met with in a farm-yard, it is of paramount importance to economize as much as possible the disinfectant. I have already shown that chlorine and ozone are very wasteful agents.

As it is our chief aim to destroy the activity of cattle plague virus, (the destruction of ordinary farm-yard odors being of secondary importance,) even sulphurous acid is open to objection on the score of waste; but carbolic acid goes direct to the root of the evil, and acts solely where it is most required, without touching the innocuous dunghill stench. Owing to the power possessed by carbolic acid of arresting and preventing decomposition, it checks the evolutions of these offensive odors, and, by retaining the nitrogenous compounds in the manure, it greatly increases its value. At the same time it stops the development in the manure of minute animal organisms, and it has been observed that flies never congregate about dunghills where carbolic acid has been habitually used (100), whilst the liquid manure which oozes from them is without smell. In stables and cowsheds this property is of very great importance, both as regards the comfort and health of the animals, especially during the hot summer months.

45. Another advantage of carbolic acid, over almost all other disinfecting agents, consists in the fact that its vapor is never injurious or unpleasant to cattle. Indeed, they seem to like it; they lick the woodwork of their stalls, after it has been sprinkled with the undiluted acid (69), and will readily drink water in which the acid has been dissolved. If applied to their mouths in its undiluted state, I am told that it will produce temporary blistering; but such blisters are entirely free from danger, and heal very rapidly. From its action on the human skin, if carelessly used, I have no doubt that inconvenience to the cattle might arise; but although carbolic acid has been used freely by me, and by many farm servants under my direction, in the treatment of several hundred animals, I have not had a single instance of this action brought under my personal notice.

If undiluted carbolic acid is allowed to remain on the hands, it will act as a mild caustic. This inconvenience is, however, very slight, and may be avoided with ordinary care. I have had my hands repeatedly covered with carbolic acid during the last four months, without experiencing any painful effects. Ample warning of the approach of blistering is given by a preliminary smarting, and if this is attended to, and the acid rubbed or washed

off, no further annoyance is felt. Sweet oil rubbed over will remove the last traces of the acid.

46. Finding that medical and scientific writers were unanimous in the opinion that small internal doses of carbolic acid were attended with no injurious effect, I have recommended the addition of small quantities both to the food and water given to the whole of the stock, sick or healthy, on the farm. This has a two-fold action. The water given to cattle is seldom very pure, and carbolic acid will neutralize any virus of infection which may happen to have found its way into it. Moreover, after drinking aqueous carbolic acid, the breath smells of it for some hours. Now, it is very probable that the germs of infection enter the animal system through the mouth (17), and by thus loading the breath with the antidote, it is reasonable to suppose that these germs would be destroyed before they had an opportunity of doing harm. The vapor of the acid, diffused through the air, will kill large insects; it is reasonable, therefore, to suppose that it will much more readily destroy microscopic germs when brought into contact with its vapor during respiration. Besides, it is not unlikely that after the system has become habituated to repeated doses of carbolic acid, it will acquire additional power of resisting the first attack of disease.

Since this investigation was undertaken, I have made a collection of cases, illustrating the good effect of carbolic acid in arresting the spread of the cattle plague in various parts of England and the Continent. I will not, however, enter into particulars, but confine myself to those cases which have come under my own immediate knowledge.* I have not yet met with a single instance in which the plague has spread on a farm where this acid has been freely used.

On the Adulterations of Carbolic Acid, and their Detection.

47. The official recommendations (50) have naturally brought

* It may, however, be of interest to state that carbolic acid was the principal substance used in the Jardin d'Acclimatation, in the Bois de Boulogne, to prevent the spread of the disease amongst the animals in that establishment. According to the *Journal of the Society of Arts* for April 13, 1866, more than twenty pounds of this acid were used daily, in washing the walls and mangers, and in sprinkling the floors of the stables and enclosures, and it is to its constant use that the arrest of the malady is generally attributed.

into market many substitutes for carbolic acid, in which the valuable agent is diluted with cheap inert bodies, whilst the price charged, in some cases, is higher than that of the genuine article. Specimens of two such substitutions, called cresyline and carboline, were forwarded to the Royal Cattle Plague Commission for approval, "as being more certain disinfectants than most of the carbolic acids now being sold to the public, many of which contain but a very small percentage of that acid." It was stated that the preparations contained over 60 per cent. of carbolic acid, and were miscible with water. As it was possible from these and other reputed advantages that the preparations might be of considerable value, they were forwarded to me for examination. Cresyline consists of alkaline water, and tar oils boiling above 370° C., therefore containing little or no carbolic or cresylic acid. Carboline is a dilute solution of caustic soda, containing 4.1 per cent. of carbolic acid. The price of these preparations is higher than that ordinarily charged for good commercial carbolic and cresylic acids.

Other creosote samples from different makers were found to contain respectively 4.5, 2.6, 5.9, and 4.2 per cent. of carbolic acid, the rest being tar oils. In other instances, articles have been sold as commercially pure carbolic acid which were found to contain from 30 to 50 per cent. Frequently a very foetid sulphur compound is allowed to remain. This should be avoided, as although the antiseptic powers of the liquid are great, the offensive odor which it diffuses round the neighborhood is excessively nauseous.

48. It is by no means difficult to detect the adulterations referred to above. Commercial carbolic acid is soluble in from 20 to 70 parts of water, or in twice its bulk of a solution of caustic soda, while oil of tar is nearly insoluble; but if the amount of carbolic acid be increased some remains undissolved.

To apply the tests:—1. Put a teaspoonful of carbolic acid in a bottle, pour on it half a pint of warm water, and shake the bottle at intervals for half an hour, when the amount of oily residue will show the impurity. Or, dissolve one part of caustic soda in ten parts of the carbolic acid. As before the residue will indicate the amount of impurity.

These tests will show whether tar oils have been used as adulterants; but to ascertain whether the liquid consists of a mere solution of carbolic acid in water or alkali, or whether it contains sulpho-carbolic or sulpho-cresylic acids, another test must be used, based upon the solubility of these, and the insolubility of carbolic acid, in a small quantity of water. In this case proceed as follows:—2. Put a wine-glassful of the liquid to be tested in a bottle, and pour on it half a pint of warm water. If the greater part dissolves, it is an adulterated article. Test the liquid in the bottle with litmus paper; if strongly acid it will show the probable presence of sulpho-acids, whilst if alkaline it will show that caustic soda has been probably used as a solvent.

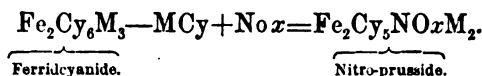
These tests are not given as having any pretensions to scientific accuracy, but as affording persons who are desirous of using carbolic acid, and are willing to pay a fair price, a rough and ready means of seeing if they are being imposed upon.

If greater accuracy in the tests are required, recourse should also be had to distillation with a thermometer—carbolic acid boils at 184° C., cresylic at 203° C., whilst xylic acid (96), which may possibly be present, and has great antiseptic value, boils at 220° C. Reichenbach's pure creosote (33) boils at 219° C.

(To be continued.)

NITROPRUSSIDES, THEIR COMPOSITION AND MANUFACTURE.

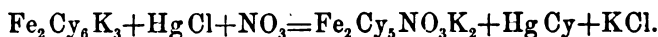
Some doubt has always been attached to the composition of the nitroprussides since their discovery by Playfair. Some recent researches, however, by E. A. Hadow, which are remarkable for the skill and ability they display, have removed all uncertainty in the matter, and have given us a clear insight into the formula for this interesting class of salts. Mr. Hadow started from the assumption that the nitroprussides are formed from the ferridcyanides, by the displacement of an atom of alkaline cyanide by one of the oxides of nitrogen. Thus:—



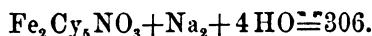
The question to be solved was, *What oxide of nitrogen replaces the MCy?* In the first instance, pure binoxide of nitrogen was passed through a warm solution of ferridcyanide of potassium, which was acidulated with sulphuric acid, so that the NO_2 might have the easier work of replacing HCy, if it could. The liquid became blue and muddy, but no trace of nitro-prusside was formed. The next experiment was to pass the red nitrous vapors from starch and nitric acid through the warm acid solution of ferridcyanide. The difference was wonderful; no prussian blue appeared, the color changed rapidly to the red of nitro-prusside, and much hydrocyanic acid came off. The conversion to nitro-prusside was almost perfect. It thus became clear that the replacing oxide of nitrogen is either NO_3 or NO_4 . That such is the case is further shown by a very simple experiment, the reverse of the last. On adding to a solution of pure nitro-prusside a solution of potash and some prussic acid, and warming, the red of the nitro-prusside changes for an instant to deep yellow, and then to pale yellow. The solution is found to contain ferridcyanide, with plenty of nitrite, but no trace of nitroprusside. Hence NO_3 or NO_4 has been replaced by KCy, and ferridcyanide reproduced.

To determine between NO_3 and NO_4 the author sought to replace the KCy by pure NO_3 , obtained by the action of acetic acid on alkaline nitrite, whereby NO_4 is absolutely excluded. Ferridcyanide of potassium solution was mixed with a solution of corrosive sublimate and acetic acid, and a nitrite added, and the whole was left for some hours, when, on examining the mixture, nitro-prusside was found in abundance.

The reaction was as follows:—



And the true formula of the sodium salt is—



Curiously enough, this formula agrees more closely with Playfair's analysis than any yet proposed.

The success of this reaction on the small scale suggested it as a means of manufacturing nitroprusside on the large scale. The following is the process Mr. Hadow gives:—

A strong solution of caustic soda is prepared, and thoroughly saturated with the nitrous acid vapors from starch and nitric acid (old battery acid does well). The amount of true nitrite of soda, NaONO_2 , in this solution is determined by permanganate, by taking a small measured quantity, diluting largely with water, acidifying with sulphuric acid, and observing the amount of standard permanganate decolorized. $\text{Fe}_4=\text{NaO}, \text{NO}_2$, in decolorizing power. The amount of real nitrite of soda in the solution being known, is recorded on the bottle.

A mixture of any bulk is then made in the following proportions:—

A {	Ferridcyanide of potassium 332 grs.	}	in $\frac{1}{2}$ pint of boiling water,
	Acetic acid (Beafoy's) . . . 800 grs.		
B {	Corrosive sublimate 164 grs.	}	make up to $\frac{1}{2}$ pint with cold water,
	Solution of nitrite of soda = 80 grs. of true NaONO_2		

adding acetic acid, if necessary, until quite clear. Pour the cold solution B into the hot solution A. The mixture becomes at first turbid, but in a few minutes afterwards quite transparent. It should be kept at a temperature of 140° (at which point little nitrous acid is lost) for some hours, with addition, if necessary, of more nitrite of soda and acetic acid from time to time, until all ferridcyanide has disappeared. When this is the case, the whole mixture may be boiled down, until, on cooling, it solidifies to a thick paste. The right state of concentration has been attained, when, on beating the paste up, and squeezing in linen, a *pale* syrup, chiefly of acetate of potash, is expressed. The pearly-looking mass, freed from acetate of potash as far as possible, must be redissolved in such an amount of boiling water, that, on cooling, a large proportion of cyanide of mercury separates in white pearly scales, quite free from nitroprusside crystals. On squeezing in linen, a deep-red solution of nitroprusside is expressed, and a white, pearly mass of cyanide of mercury remains on the linen. On concentrating the red filtrate, a large crop of crystals of nitroprusside of sodium is obtained in a mother-liquid containing more or less cyanide of mercury, in pearly scales, easily separated by throwing the whole on a moderately coarse hair

sieve, which will retain the prisms of nitroprussides of sodium, and allow the cyanide of mercury to pass through. The prisms may be washed quite clean by allowing the cyanide of mercury to settle down in the filtrate, and using the clear supernatant fluid for washing. The operation, can of course, be continued as far as it may be deemed profitable. If the cyanide of mercury is not wanted as such, it can be made to furnish hydrocyanic acid and corrosive sublimate for use again, by boiling with hydrochloric acid.

It may be added, in conclusion, that nitroprussides react well only with monosulphides. The more of a persulphide the solution contains, and the deeper the yellow color, the less distinct is the reaction. This difficulty can be overcome by warming the yellow persulphide with sufficient cyanide of potassium to decolorize it, when the beautiful carmine of the monosulphide will be obtained.—*London Pharm. Journ.*, February, 1867.

DEODORIZING INDIA-RUBBER.

The extremely disagreeable odor attaching to india-rubber manufactures, and the power possessed by them of imparting a nauseous taste to liquids or other substances, has long been a difficulty in the way of its use for many purposes for which india-rubber is peculiarly adapted. To obviate this evil many expedients have been resorted to, but none hitherto with perfect success, and this on account of the strong tendency which india-rubber has to acquire and retain odors. The new process, invented by Mr. S. Bourne, depends upon the still greater affinity possessed by charcoal, especially animal charcoal, for all kinds of odors, and its great capacity for the absorption of gases. The practical difficulty lies in so using the charcoal as not to injuriously affect the articles with which it may be brought into contact, and this has now been overcome by very simple means.

The mode of application necessarily varies according to the description of articles which are thus treated. Generally speaking, they are laid in shelves or trays in a hot chamber, with a thin stratum of charcoal beneath and on top, and exposed to a temperature of from 120 to 180 degrees for from three to six

hours, after which they are removed from the charcoal, having sustained no other alteration than the all important one of being rendered devoid of smell and incapable of imparting any taste to liquids or other substances they may touch. Under proper management the most delicate textures can be thus dealt with without being impaired either in substance or appearance. The most convenient mode of applying heat is by hot water or by steam surrounding the vessel or chamber in which they are placed. One very considerable advantage of this process is, that for a large number of vulcanized articles it can be carried on in co-operation with the heating or curing by which the vulcanization is effected, and they leave the chamber at once free from odor. It is equally applicable to india-rubber in sheet, spread fabrics, or the garments or other articles made therefrom when fully made up, such as the ordinary "macintosh" clothing, air and water cushions, etc. The use of this process enables the inventor to produce his "flexible diaphragms" (which were first brought before the public at the Dublin Exhibition, where they obtained a prize medal) in so pure a state that they may at once be used with the most delicate wines and other liquids. The diaphragm itself is a contrivance for the division of casks or other vessels into two separate chambers, by means of a flexible partition, which fits to the upper or lower part of the vessel alternately, or into any intermediate position, so that whatever the quantity of liquor contained within it, the air (though still exercising its pressure through the medium of the diaphragm) is separated from it by an impervious shield, and thus the injurious effects of exposure to atmospheric influence are altogether avoided, and any portion of the liquor may be withdrawn at pleasure, and as often as may be, without any admission of air to the remaining portion. In this way vessels of wine and beer are stated to have been actually kept in constant use for six and twelve months without any fermentation or formation of acid resulting. It is equally applicable to other liquids for domestic use or for medicinal or scientific purposes, the fluid remaining as completely secured as if the vessel were actually full.

An adjunct to this invention, and which admits also of inde-

pendent use, is in the elastic valves, in two varieties—the one for giving vent to the products of fermentation, when desired; such as the carbonic acid gas generated by malt liquors, etc., the other for giving admission to air, so as to enable the liquid to flow through the tap or other orifice. In the one case a circular disk of vulcanized india-rubber is made to cover a small opening through which the gas is free to escape, but meets in its passage with the india-rubber, which being forcibly held down round its edge is at liberty to become distended, and in so distending opens a number of very minute holes, which have been previously pierced through its surface. When the pressure is removed, the disk again becomes flat and its orifices shut. The degree of pressure to be sustained before these perforations open is perfectly under control, and may be adjusted to any required degree.

In the other form a small cylinder of india-rubber, closed at its lower end, is drawn over a corresponding cylinder of wood with a hole through its center, and then tightly bound at its upper edge. The india-rubber has a number of slits made in its substance, which (when any orifice through which the liquor may flow is opened) receives the pressure of air, and yielding to this, open, so as to let the air enter the vessel in exactly the same extent as the liquor is withdrawn. When the flow of liquor is stopped, the edges of the slits become drawn together, so as to prevent any escape of liquor or gas in a wrong direction. Should there be any pressure from within upon the surface of the india-rubber, this will only tend to the more perfect closing of the slits, and thus, while affording sufficient ingress, altogether restrain egress.—*London Pharm. Journ.*, February, 1867, from *Journ. Soc. Arts*.

ON FRUIT ESSENCES.

By M. KLETZINSKI.

The products known under the name of Fruit Essences, are alcoholic solutions of different ethers, to which is sometimes added certain acids, or certain natural essences. Glycerine is found in all; it appears to blend the different odors, and to

harmonize them. It is necessary to state, that the alcohol used, as well as all the other substances, must be chemically pure.

*Each Column represents in Cubic Centimetres the quantity to be added to 100 Cubic Centimetres of Alcohol.**

Names of the Essences.	Chloroform.	Nitric Ether.	Aldehyde.	Acetate of Ethyl.	Formiate of Ethyl.	Butyrate of Ethyl.	Valerianate of Ethyl.	Benzoate of Ethyl.	Ginanthylate of Ethyl.	Essence of Persicot.	Sebacic Ether.	Salicylate of Methyl.	Amylic Alcohol.	Acetate of Amyl.	Butyrate of Amyl.	Valerianate of Amyl.	Essence of Lemon.	Essence of Orange.	Alcoholic Solutions saturated in the cold of			
																			Tar taric Acid.	Oxalic Acid.	Succinic Acid.	Benzoic Acid	Glycerine.
Pine-apple.....	1	...	1	...	...	5	...	...	...	...	...	...	...	...	10	...	...	...	...	...	3
Melon.....	...	...	2	...	1	4	5	...	...	...	10	...	...	...	...	...	...	...	...	...	3
Strawberry.....	1	1	5	1	5	...	...	...	...	...	...	1	...	3	2	...	...	...	...	...	2
Raspberry.....	1	1	5	1	1	...	1	1	...	1	1	...	1	1	1	...	...	5	...	1	4
Gooseberry.....	...	1	5	...	...	...	...	1	1	...	...	...	...	...	...	...	...	5	...	1	...
Grape.....	2	...	2	...	2	...	...	...	10	...	...	1	...	...	...	...	...	5	...	3	10
Apple.....	1	1	2	1	...	...	...	...	...	...	...	...	...	...	...	10	...	...	1	...	4
Orange.....	2	...	2	5	1	1	...	1	...	...	...	1	...	10	...	...	10	1	...	...	10
Pear.....	...	...	5	...	...	...	...	...	...	...	...	...	...	10	...	...	...	...	...	...	10
Lemon.....	1	1	2	10	...	...	...	...	...	...	...	...	...	...	...	10	...	10	...	1	5
Black Cherry.....	...	...	10	...	...	5	2	...	...	...	...	...	...	...	...	...	...	...	1	...	...
Cherry.....	...	...	5	...	...	5	1	...	5	1	...	...	...	...	...	...	...	...	...	...	3
Plum.....	...	5	5	1	2	...	4	...	...	...	...	...	...	...	...	...	...	...	...	1	8
Apricot.....	1	...	...	...	10	5	...	1	...	2	...	1	...	...	1	...	...	1	...	...	4
Peach.....	...	2	5	5	5	5	...	5	...	1	2	...	...	...	...	...	...	...	...	...	5

—*London Pharm. Journ., February, 1867, from Dingler's Polytech. Journal, clxxx. p. 407*

A DISCOURSE ON TITLES, ETC.

BY EDWARD PARRISH.

By the public acts of this Association and of the several Colleges of Pharmacy, we have repeatedly asserted our claim to the title of a Profession—the Profession of Pharmacy;—but the public, for whom we labor and from whom we claim the fruits of our labor, are no doubt variously impressed with the justness of this claim according to their appreciation of us individually, and their understanding of the term Profession as thus applied.

Do we make good our claim by corresponding actions? The

* In other words, each Column represents the number of measures to be added to every 100 measures of alcohol.

so-called profession of medicine has a well recognized status in the community; it has been for centuries placed in a separate and quite distinguished niche in the social edifice. Doctors were long expected to appear in broadcloth, with well polished shoes, clean soft hands and well shaven chins. They must carry themselves with a genteel and professional air, and converse in good English with some show of classic lore.

The professional intercourse of such with the public is somewhat reserved; guided by rules of ethics that shut them out in good degree from the ordinary effects of competition, they sit in closed offices, approachable only by a knock or ring at the bell. Neither trafficking in merchandize nor creating material products, their commodities are knowledge and skill, and they exact fees rather in proportion to their reputation than the amount of labor bestowed.

In which of these points, brethren of the pestle and mortar, do we resemble these professional men *par excellence*? As we look over our Conventions, do we recognize that odor of gentility, that professional air, which in popular estimation would entitle us to range with these distinguished classes?

I admit that in regard to dress and manners the old-fashioned distinction to which I have alluded has in good degree disappeared with the progress of civilization and refinement, and he must be ignorant indeed who would found any classification of his fellow citizens upon such unmeaning particulars.

Language furnishes a rather higher grade of distinction, generally giving some clue, if not to the extent and variety of education, at least to early domestic training and culture, yet who has not known most esteemed doctors of the law, of medicine and even of divinity, who have misused and mispronounced the plainest words, and have talked as unpolished English as an ordinary tradesman or mechanic?

The truth is that now-a-days the masses are being brought up in general education and refinement where the learned professions were two generations ago, and if asked to select models of intelligent, influential and even cultivated men we should probably find almost as many in mercantile circles and among master

mechanics, bankers, financiers and business men as among those formerly characterized as of the learned professions.

A long recognized difference between the professional man and tradesman has been adverted to in the fact that the former deals in ideas and opinions, and is approached through some formality in a dwelling or office, while the latter, to use the familiar phrase of the English, keeps open shop, buying and selling merchandize for a profit.

If we were to picture a preparer and dispenser of medicines who should justify the public estimate of a strictly professional man, we might fit him out somewhat as follows: He should have a neat suit of rooms in a building having no aspect of a shop, no bulk windows or show cases. On entering the reception room the patron should be shown to a seat, furnished with suitable reading matter during the necessary detention. The prescription to be compounded should be taken to the laboratory adjoining, duly registered and prepared. Any medicine or medicinal appliance which should be sought without a physician's prescription could be furnished to order, or might be the subject of consultation with the pharmacist, whose office should adjoin the reception room and the laboratory, and be furnished with analytical tests and apparatus, a scientific library and other conveniences. The stock, which would be strictly confined to those articles needed in sickness and as dietetics, would be arranged in the laboratory and store room and need not be displayed to the view of the public.

The numerous fancy articles, appliances for the toilet and empirical preparations which are displayed in cases in our shops, would be missed from this genteel and professional pharmacy, and their places might be filled by many appropriate and attractive features combining utility and ornament.

The proprietor of this establishment must of course be an educated man, possessing a full and accurate knowledge of all the sciences accessory to his art; his attention would be directed to giving advice equally to physician and patient, who would resort to him on the ground of his superior attainments and exclusive devotion to the professional duties pertaining to the selection, preparation and dispensing of medicines. Eschewing every

species of quackery and depending only upon intrinsic merit for success, such a pharmacist might be independent of competition, and if he possessed adequate personal qualifications for his profession, a good situation and large constituency, and was respected by the medical profession as he would deserve, he might demonstrate the feasibility of taking from Pharmacy its unprofessional features and giving it the external appearance of a profession.

Keeping open shop is certainly in no sense degrading, and I would not in this portraiture of the ideal professional pharmacist be understood as setting him one whit above those of us who, in good faith toward physicians, the public and each other, fulfil the obligations of our present position; the establishment of such a professional dispensing office would be an experiment upon the public demand for something more *recherché* than we now have in this country, but it would not insure more accuracy or neatness in the execution of prescriptions or more completeness in the arrangements for supplying the wants of the sick than at present are secured in hundreds of our first-class shops.

As to dealing in ideas and opinions constituting a feature of professional as contradistinguished from other pursuits, even that distinction fails when we consider how large a share these elements have in many other branches of trade and business. Science has entered the work-shop and counting-house, and is perhaps more thoroughly appreciated in many other industrial occupations than in medicine, while those branches of education the aggregate of which constitute what is technically called learning, find votaries in those of almost every business pursuit.

Our plain republicanism in America has happily abolished the aristocratic titles in which many Europeans delight, and it is equally proper that we should confine ourselves in the circles of science and professional learning to those titles which convenience calls for. The title of *Doctor* applied to the practitioner of medicine is convenient but not always indicative of a high grade of attainment. Practically it means something far less dignified than was intended when it was applied only to individuals of distinguished learning and ability.

Some years ago a physician of repute in the South, who at-

tended my course of instruction in Pharmacy and seemed to have a pretty high appreciation of my knowledge and skill, said to me, Why don't you matriculate in some medical school and get the title of M. D. to add to your name? You would find it very promotive of your reputation. This is not an exclusively Southern idea, though perhaps more general in those communities in which labor is least respected; it pervades somewhat our practical Northern thought, but I trust is diminishing as genuine republicanism grows. As if to cure any undue estimate of this title, it can be had from legally authorized Colleges almost for the asking.

In medicine several kinds of *pathies* are represented by chartered Colleges, and even the so-called regular practice has cheap concerns sailing under the name of Colleges and even Universities, duly authorized to confer the M. D. upon any ignoramus who may seek it at their hands almost without study—quite without any adequate instruction. Moreover, anybody who wants to present to the public his valuable cure for cancer or consumption may prefix Dr. before his name or M. D. after it, and whether the title came to him through the formalities of a College Commencement, or was assumed unasked to promote the ends of his business, it serves as a handle to his name useful in deceiving the most ignorant, but of no account in the estimation of men of intelligence and good sense.

The term *Professor* is sometimes put very prominently before us as one of superior distinction—a still larger handle to the name. We have, however, professors of hair cutting, of carpet shaking, of dancing, and of the “noble art of self defence,” as well as of medicine or surgery; and if we may judge of the public appreciation of the term by the use made of it in the newspapers, it has a much wider significance than that of men of learning or science appointed to the office of teachers by incorporated Colleges, which is its technical definition.

I have alluded to the fact that among us competition is equally open to all who please to invest the necessary energy and capital in business. We have colleges of Pharmacy and give Diplomas, and a title (which, however, is not commonly used;) and although I would be the last to discourage pharmaceutical education as

carried on in these institutions, believing it to be of incalculable value not only to individuals availing themselves of them, but through them to the whole community, yet we cannot disguise the fact that the Diploma is very far from giving assurance of any real superiority. Most young Pharmacists of energy and enterprise appreciate scientific knowledge so highly as to seek the Colleges and to obtain a Diploma, and yet if we look for those in our several communities who enjoy the largest share of patronage both from physicians and the public, we shall find a considerable proportion of them have never attended upon systematic instruction in a College. The young graduate in Pharmacy struggling into business thinks it very hard that he should be outstripped by a competitor who shows no diploma, and yet he finds sooner or later that, in the race for business, he wins who is the best business man and applies himself with the most energy and ability to serve the public.

On the subject of legal protection my views have changed with the growth of experience; formerly I could see many reasons for legal restrictions protecting the professions from the results of competition, and bestowing a sort of bonus upon scientific acquirements. Now it appears to me that, like all other partial legislation, this restrains rather than promotes the great interests involved. Let us extend intelligence among the masses, and break down every false pretense by fair and equal competition, trusting to the good sense of the people to promote and conserve the cause of education and of the public health.

Since, then, the claim the educated preparer and dispenser of medicines makes to the title of a professional man is but partially acknowledged by the public, and since in our time and country it is no discredit to the most accomplished man of science that he thrives through the honest pursuit of a useful trade, I, for one, am willing to abandon any such pretensions to the professional character as involve the use of a title of distinction.

A name or title to designate our calling is, however, a desideratum; a title which should at once be brief, distinctive, intelligible and universal, for, strange to say, though the craft of the apothecary has been practiced more or less, in connection with the science and art of medicine, from the earliest periods of which

we have historical records, we have in our language no universal method of designating it. The term *Apothecary* has a different meaning in England from that applied to it on the continent of Europe and in this country. In England they call a man a *Chemist and Druggist* who in the United States would be called a *Pharmaceutist*, though this latter term is by no means universal among us, our brethren in New England still calling themselves apothecaries, and a very large number in all sections of country having never yet adopted the new word Pharmaceutist. The French have a good name for the purpose in *Pharmacien*, and some among us have anglicized this, spelling it *Pharmacian*, corresponding in termination with physician, and an improvement upon its four-syllabellied synonym. This is very rarely used, however, and I think rather less adapted to our purpose than Pharmacist, the term I have used in this paper and which I am inclined to prefer, from its close correspondence with druggist and chemist, its easy pronunciation and spelling, and its being short, and hence convenient to write and to speak. It may be said, as we have no uniformity in the use of the old terms, why introduce a new one to complicate the matter? I reply that I consider the whole question of terms an open one at present. Uniformity would now be quite impossible, and it is necessary that by discussion we should arrive at a clear and well considered choice, adopt a term that would be uniformly acceptable, and give it the sanction of a formal approval by this and other representative bodies of those interested. This is one of the subjects which has a common interest for this Association and the British Conference, and if Pharmacist or Pharmacian should be the noun adopted to designate the individual, Pharmacal might be the adjective used in connection with the respective names of our Associations, and wherever we now use the very long and awkward word Pharmaceutical. In this connection the names to be applied to our stores or shops should also be discussed. Some Pharmacists have quite repudiated the very proper term of *shop* as applied to their places of business, preferring the more pretentious word *store*, in fact the general practice indicates that choice. To this is added the adjective Pharmaceutical, or more

frequently drug and chemical, sometimes all three. Since the nature of the business is equally well understood by the public in either case, the sign being less important than the appearance of the front window and of the shelving and show cases within, it becomes a matter of choice with each individual how he will designate his business on his sign, his business cards, his labels, or in his advertisements. Acting on this principle I have selected the name "Pharmacy" to designate my place of business. I find it convenient, brief and sufficiently distinctive, though liable to these apparent objections. The term Pharmacy is applied in a general way to the science and art which we practice, and the use now proposed for it is such as to give it a direction to the place in which we practice it. Moreover, my treatise on Pharmacy is commonly called among booksellers "Parrish's Pharmacy;" my store has the same appellation. These objections should be considered, however, in connection with the acknowledged flexibility of language, and the fact that the connection in which the word is used greatly modifies its accepted meaning. During the several years that I have applied it in that way it has served me a good purpose. As differently spelled, (*Pharmacie*,) it serves the whole French nation for the same use, and I believe if it were generally adopted it would be like some other things we have borrowed from France, an improvement.—*Proc. Am. Pharm. Association*, 1866.

ON THE PREPARATION OF PURE SILVER.

BY PROFESSOR J. S. STAS.

(Concluded from page 166.)

Second Method.—This method furnishes it easily and more promptly than any other known way; it has the special advantage of giving it in a state of rare purity. I will describe it in detail, as I am convinced that it would be useful in laboratories and in the workshops of the Mint for the preparation of assay metal or *standard* silver.

It is based upon the *complete* reduction which ammoniacal solutions of silver compounds undergo when added to ammoniacal

cuprous sulphite, or to a mixture of sulphite of ammonium and any ammoniacal salt of copper.

At the ordinary temperature this reduction takes place slowly with deposition of black, blue, or grey silver, according to the dilution of the liquids. Above a temperature of 60° C. the reduction is almost instantaneous, and the silver is precipitated in a state of division corresponding to the dilution of the liquid; its colour varying from grey to pure white.

This is how I prepared silver by this method.

Silver coin is dissolved in dilute and boiling nitric acid; the solution of nitrate of silver and of copper is evaporated to dryness, and the saline mass fused. This fusion is necessary to destroy the *nitrate of platinum, which is often formed in dissolving silver coin.**

After cooling, the nitrates are taken up by an excess of ammoniacal water. The ammoniacal solution is left to rest for *forty-eight hours*. The limpid liquid is filtered through a double filter of paper, and then diluted with distilled water until it contains no more than *two per cent.* of its weight of silver.

I procured neutral sulphite of ammonium by mixing ammonia with sulphurous acid. To ascertain the quantity of sulphite required for the complete precipitation of the silver from the ammoniacal solution of nitrate of silver and copper, I heated to the boiling point a definite volume of solution of sulphite of ammonium, and I found the volume of the solution of silver and copper which was decolorized by this salt. Experiment has, in fact, proved to me that so soon as the sulphite of ammonium, *sufficiently heated*, is not colored blue by the cupric oxide dissolved in the ammonia, there remains no trace of silver dissolved in the liquid, because in this case all the copper exists in the cuprous state, the presence of which is incompatible with that of any compound of silver dissolved in ammonia.

The quantity of sulphite of ammonium necessary for the precipitation of the liquid having been determined, I added it to the argentiferous solution, and after being well mixed, it was left to itself for *forty-eight hours* in a closed glass flask, to prevent the

* I have found by several trials that French silver contains iron, nickel, and traces of cobalt, platinum and gold.

contact of the air. At the end of this time about a third of the silver was reduced at the ordinary temperature, and was precipitated in the form of a shower of crystallized silver, of a greyish-white color, and very brilliant.

I then put the decanted blue liquid, in quantities of ten litres at a time, in a water-bath at a temperature of from 60° to 70° . The time required to cause the elevation of temperature was quite sufficient for the complete reduction of the silver in solution, and for the reduction of the cupric sulphite to the state of cuprous sulphite;* especially as I was careful to take a sufficient excess of solution of sulphite of ammonium.

The silver being eliminated, I decanted the liquid when cold, and proceeded to wash separately the silver precipitated from the cold and the warm solutions. This washing was performed by decantation with ammoniacal water; it was continued as long as the washing waters were perceptibly colored blue by exposure to air, or precipitated chloride of barium. I afterwards left the silver for several days in concentrated ammonia, and then washed it in pure water.

If the solution from which the silver is precipitated has been diluted until it contains no more than 2 per cent. of silver, the ammonia left in contact with this metal is not colored even after several days' digestion. There is no longer any copper for the ammonia to dissolve; it *dissolves silver* instead, for this metal is feebly attacked by the alkali under the influence of air, as it is easily proved by evaporating liquid ammonia which has remained several days in contact with turnings of pure silver. This liquid always leaves a black shining mirror of nitride of silver by its spontaneous evaporation.

I prepared silver by this method at four different times, and in the last I operated upon 2500 grammes of silver at once. I have proved that by fulfilling all the conditions I have described, and *especially by carrying the dilution of the ammoniacal solution of the nitrates of silver and copper to 2 per cent. of silver, we*

* The liquid in which the reaction takes place becomes quite colorless if the copper contains neither nickel nor cobalt. If it contains nickel, it takes a slight green tint; it takes, on the other hand, a reddish tinge if there is cobalt in the dissolved metal.

obtain silver of a rare purity. When it was wanted to form the precipitated silver into bars, I fused it with 5 per cent. of its weight of calcined borax containing 10 per cent. of nitrate of sodium, as I mentioned in the case of the silver reduced from the chloride by potassa and sugar of milk. I have also fused large quantities with the aerhydrogen blowpipe in a crucible of pure procelain, or in an oxyhydrogen gas furnace in crucibles of marble lime.—*From Memoirs of the Royal Belgian Academy in London Chem. News, Feb. 1, 1867.*

ON THE EMPLOYMENT OF NARCEINE.

BY DR. EULENBERG.

The following is translated in abstract from the “*Répertoire de Pharmacie.*”

The doses of Narceine commonly employed by Dr. Eulenburg for *internal use* were from $\frac{1}{8}$ th to $\frac{1}{2}$ a grain; and for *hypodermic use* from $\frac{1}{8}$ th to $\frac{1}{4}$ th of a grain. With healthy persons these doses are generally followed by a slight narcotic effect, without any accompanying disagreeable subjective symptom, such as headache or gastric derangement. When used hypodermically it produced a sensation of burning at the place of puncture, but of little intensity and duration, a sensation in every case less evident than that caused by every other alkaloid (morphia, quinia, etc.) It never had any irritant effect; but in patients with sensitive skins, when the injection was made on the face, it produced an œdematous swelling without redness at the place of puncture, which disappeared in from one to two days, leaving a somewhat sensitive and limited induration. Such an effect has nothing in it of a peculiar nature, as it has been noticed after the injection of other alkaloids, as morphia, for example.

Among the physiological effects of narceine which accompany the narcotism is its action on the circulation; this consists principally (contrary to the action of atropia) in a diminution of the pulse, succeeded some time after by an acceleration. In rare cases, the pulse is accelerated during its employment by twelve to sixteen strokes in a minute. Its action on the cutaneous

nervous system appears to resemble that of other narcotics, and produces its effects directly when used hypodermically, and indirectly, by acting on the centres, when given internally. The repeated use of internal doses often produces from one to two stools, sometimes even diarrhœa. On the other hand, it appears to retard the appearance of the menses. M. Eulenburg concludes that, for sedative and hypnotic effects, narceine is preferable to every other substance. Besides its employment in some essentially neuralgic affections, its use is indicated in all cases where pain is a prominent symptom, as in articular affections, phlegmons, ocular lesions, (iritis, keratitis, etc.), orchitis, blennorrhagic epididymitis, cystitis cirrhosis of the liver, and in wounds, or after painful operations. In all these cases, narceine, when employed either internally or externally in the doses before mentioned, rapidly lessens the pain, and often produces a sleep of four, five, and even nine hours,—sleep which is soft, tranquil, uninterrupted, and followed by a quiet awaking. These doses never give rise to any derangements or any poisonous effects. Although, by the use of morphia, in numerous cases we obtain the same effects, it often fails; many diseases (especially among women) present, in fact, a kind of idiosyncrasy which renders the employment of morphia impossible; thus, by its internal use vomiting is produced, or else the medicine causes, instead of a refreshing sleep, a state of great excitement, with distressing dreams, delirium, and convulsions; while, in some other diseases, morphia, without appreciable cause, produces only a very slight effect, or one of very short duration. The hypodermic employment of morphia renders it more active and more trustworthy, but it increases in a like degree all the inconveniences, and often gives rise to cephalalgia, faintings, vomitings, or profound collapse; often the sleep is very prolonged (according to Semeleder, fifty-four hours); and sometimes the effects of morphia are prolonged even for some days after the awaking.

Narceine, as an anodyne and narcotic, may be always employed in place of morphia, and is in every respect equal to it in value, and even in a great many cases is to be preferred to it.

M. Eulenburg has not as yet had many opportunities of em-

ploying narceine in hemicrania, supra-orbital, trifacial, and crural neuralgias, but every time it was tried it produced a rapid cure. In hemicrania $\frac{1}{4}$ th of a grain taken at the commencement of the attack, produced a sleep of several hours, followed by an awaking in perfect health.—*London Pharm. Journ.*, Feb., 1867.

ON THE PREPARATION OF MEDICAL TINCTURES.

By M. FILHOL.

The various writers on the preparation of medical tinctures have given most of their attention to the best method of exhausting substances submitted to the action of a solvent (alcohol, ether, &c.). Two methods have been proposed. The first consists in macerating the substances properly divided for a sufficient time in the liquid which is to produce the tincture, and filtering and submitting the residue to sufficient pressure to extract the portion of tincture it retains. The second, known as the displacement method, consists in submitting the substance destined to undergo the action of a solvent to a methodical washing and displacing the tincture remaining in the powder by water, or by alcohol when an alcoholic tincture is desired.

It is generally admitted that the latter method produces in a very short time a tincture quite as rich, sometimes even richer, in soluble material than that obtained from the same substances by prolonged maceration. But it is undeniable that those prepared by maceration keep better, and are less apt to become turbid, than those prepared by the second method. On the other hand, it seems impossible to displace alcohol by water, for the two liquids mix in an appreciable manner, and little economy can result from this plan. The maceration process seems then to be the best.

I will not here enter into all that has been said for and against each of these methods, but will merely observe that the question does not appear to me to have been hitherto studied in a manner which is alone calculated to remove all doubts.

It would, in fact, be of little consequence that tinctures prepared by the displacement method should, after a few days, furnish a slight deposit, were it proved that the substance form-

ing this deposit was inert, and that its preparation did not lessen the value of the medicine. It would be quite the reverse were this deposit formed essentially of principles possessing great activity. This, then, is a point which it was necessary should be cleared up by a series of consistent researches and qualitative analysis, executed with all possible care and precision.

It is important, also, in estimating the value of the tinctures, not to rely solely on their relative densities, or on the quantity of dry residue left by evaporation, but rather on the results of the analyses of these residues, for it sometimes happens that the best tincture gives the least residue, being richer in alkaloids and other really active principles than those giving the smaller quantity of residue. I am aware that the researches I have indicated would require much time and skill on the part of the operator, but there are many druggists capable of successfully undertaking them.

One word more concerning tinctures.

In my opinion, alcohol is not so good a preservative as it is generally supposed to be, and the tinctures should be used as soon as possible after they are prepared. The following facts prove that certain immediate principles of vegetable origin alter when dissolved in alcohol.

A tincture prepared from the leaves of a plant will be of a beautiful green color, due to the presence of chlorophyl, and will, under the influence of hydro-chloric acid, undergo transformations, which M. Frémy has described, and which I have studied myself. Now, these transformations do not take place in a tincture which has been prepared for several months, and the most essential characteristics of chlorophyl disappear.

The petals of the ranunculus, macerated in alcohol, give a golden yellow tincture, which, on the addition of an equal volume of hydrochloric acid, turns green. After the liquid has been filtered, a yellow substance remains on the paper, and the filtered liquid is of a pure blue colour. Nothing of this kind takes place when the tincture has been kept some time. Then the liquid remains yellow in spite of the addition of hydrochloric acid. In this case the xanthine of the flowers has been altered, as well as the chlorophyl.

Attentive study will probably lead to the discovery that other matters also undergo great alteration.

Now it is certain that tinctures, possessing all the properties I have mentioned, can be prepared from leaves or flowers well dried and kept from air and light for several months. It is therefore better to preserve the plants than the tinctures, and the latter should, as I have said, be prepared in small quantities, and used as fresh as possible.—*From Journal de Pharmacie de Chimie*, vol. iv., p. 22.—*London Chem. News*, Feb. 8, '67.

ON THE EXAMINATION OF DIABETIC URINE; NEW RE-AGENT FOR GLUCOSE.

BY L. B. FRANQUI AND L. VANDE VYVERE.

After noticing the several reagents used, and pointing out their special inconveniences, the authors propose a solution containing oxide of bismuth as being free from these defects. "We have found," they say, "that hydrate of bismuth dissolves in caustic potash, under the influence of certain organic bodies, such as glucose, cane-sugar, dextrine, tartaric acid, &c." These solutions do not form a precipitate on boiling, except in the case of glucose.

Guided by these results, we are induced to recommend, for the detection of glucose in urine, the following process, which cannot give rise to any fallacy:—

Prepare the reagent by precipitating a solution of acid nitrate of bismuth by a great excess of caustic potash, and pour a solution, drop by drop, into the moderately heated solution until the precipitated hydrate of bismuth is completely redissolved.

To recognize a diabetic urine, heat a portion with the above solution.

After a few minutes' ebullition, the urine becomes brown, and metallic bismuth is then precipitated in the form of a black powder of crystalline appearance, adherent to the glass, if glucose is present.

We have satisfied ourselves that the principles contained in normal urine, such as urea and uric acid, do not precipitate the above reagent. Albumen only causes a brown color and a slight

turbidity, which we consider to be due to the formation of sulphide of bismuth.

Sulphuretted urines also give a black precipitate in a solution of oxide of bismuth in potash and tartaric acid ; but this reaction cannot be confounded with that caused by glucose.

It is, besides, easy to recognize and (if desired) to separate the albumen. Thus, on bringing to ebullition the urine of a person suffering from Bright's disease, the liquid becomes turbid, opalescent, and deposits coagulated albumen.

As to sulphides and sulphuretted hydrogen, these are easily recognized by means of hydrate of lead, which these compounds darken.—*London Chem. News*, Feb. 15, 1867, from *Gazette Médicale*.

POISONING BY STRYCHNIA ; CANNABIS INDICA.

In a recent number, we reported in our periscopic department a case of recovery from strychnia poisoning by means of chloroform. We now add another, which recovered under the use of *Cannabis indica*, and tr. of camphor. The case occurred in the practice of Dr. S. A. McWILLIAMS, of Chicago, by whom it is reported in the *Med. Examiner*. Patient, 31 years of age, took, suicidally, 5 grains of strychnia. Was seen by Dr. McW. 3¼ hours afterwards, when he had extensive frequent and severe spasms, and with each a blowing of froth from the mouth. He lay upon his back, arms extending obliquely from his body ; face flushed ; perspiration rolling off him ; pupils dilated widely ; pulse 130 per minute ; color of lips natural ; stiffness of muscles and inability to move limbs ; mind perfectly clear. A drachm of the tincture of cannabis indica was immediately given, and another in five minutes ; then two similar doses at intervals of ten minutes ; afterwards two such doses at fifteen minutes interval with a rapid amelioration of symptoms ; the next drachm was given in an hour and a half. The remedy, which afterwards was alternated with camphor, was continued as the urgency of the symptoms demanded, and the patient recovered, with uninterrupted convalescence, after 48 hours.—*Med. and Surg. Reporter*, Philada. February 2, 1867.

STANDARD THERMOMETERS.

To the Editor of the *CHEMICAL NEWS* :

Sir,—As the question touched upon by your correspondent, “Zero,” about standard thermometers is of considerable importance on account of the comparison of accurate thermometric observations—as, for example, those suggested by Drs. Compton and Aitkins for the careful observations of the temperature of the human body during disease—I venture a few words on the point.

In your article it is stated that Mr. H. C. Kay’s instrument, as certified by Mr. Glaisher, differs $1\frac{1}{2}^{\circ}$ from the instrument with a Kew certificate. This statement implies at once that there are either two standards in England, that of Kew and that of Greenwich, differing $1\frac{1}{2}^{\circ}$ from each other, or that Mr. Glaisher must have made a mistake of $1\frac{1}{2}^{\circ}$ by the comparison of this instrument. Now neither of these suppositions is probable, for it is not likely that the standards at Kew and Greenwich should differ to any measurable unknown amount, nor is it likely that a man like Mr. Glaisher would make such a mistake. It is, therefore, evident that we must otherwise account for this difference. I applied to Mr. F. Pastorelli, of 208 Piccadilly, one of the most careful and accurate manufacturers, for an explanation, which he was kind enough to give me at once. Mr. Pastorelli informed me that it was a fact, known to most practical and accurate manufacturers, that thermometers made in the usual way did acquire gradually an increasing index error which would reach the maximum of 1 to 2 degrees about a year after the manufacture, but remain then as good as constant. Mr. Pastorelli believes this increasing error to be owing to the contraction of the glass after its manufacture. He explained to me a process he followed to avoid this after-contraction as much as possible, but this I shall pass over as being merely important to manufacturers.

After the above explanation it is, therefore, very probable that Mr. Kay’s instrument acquired this greater additional index error first after its comparison by Mr. Glaisher with the standard. But how have we to account for it that the instruments with the

Kew certificates should not have acquired the same increased error? This may be that those instruments were originally more carefully made, or adjusted some time after their manufacture. But if such considerable errors are possible even in certified thermometers, it would perhaps be advisable to place at different easily accessible localities standard instruments which are carefully rectified, to enable any gentleman engaged in meteorological, medical, chemical, or other thermometric observations, to convince himself of the correctness of his instrument, so that an accurate comparison of different observers can easily be made.

I am, &c.,

A SUBSCRIBER.

—*London Chem. News*, Feb. 22, 1867.

THE MANUFACTURE OF SALT.

Our attention has been called to the following extract from a work entitled, "The Resources, Products, and Industrial History of Birmingham and the Midland Hardware District," 1866. Mr. Samuel Timmins is editor, but the name of the author of the chapter on salt is not given.

When factory and other operatives receive so much legislative attention, it is only fair to remember these neglected saltmakers of Worcestershire.

Solution and crystallization are so interesting to chemists that we think it probable that mention of this subject in the *CHEMICAL NEWS* will bring a large amount of attention.

"The social condition of the saltworkers has for centuries been, and in most cases continues to be, a reproach to English civilization. The heat of the stoves and pan houses in which they work, and which frequently better deserve the name of their homes than the miserable hovels in which they huddle out of working hours, renders more than a minimum of clothing unnecessary, if not burdensome, and even this minimum is not unfrequently dispensed with by both sexes. The work is necessarily continuous day and night, and from Monday morning to Saturday evening it often happens that the laborer never quits the precinct of the works, snatching his intervals of rest beside the pans. Men and

women, boys and girls, are thus exposed to more than all the debasing and demoralizing influences which haunt the worst dwellings of our agricultural laborers, without a single antagonistic agency to prevent their lapse into the lowest depths of brutish immorality. The social condition of the saltworkers has consequently been, and probably still is, more abjectly degraded than that of any other class equally numerous, although their poverty is by no means so depressing. With scarcely an exception, wherever salt manufactures on a large scale have existed, the population employed in them has been the disgrace and pollution of the neighborhood, a community almost unapproachable by philanthropy and irreclaimable by religion. Happily we are able to record the dawn of better days in the district nearest to Birmingham.

“It is now eight years since the employment of women at the Stoke Works was entirely discontinued by the proprietor, John Corbett, Esq., and although the full result of the measure will not be felt until a new generation has arisen, it has already acted on the habits and condition of the workpeople in such a manner as to produce a social revolution in the neighborhood. Marriage, an institution previously almost ignored, has, in a great measure, superseded the indiscriminate concubinage resulting from the former conditions of labor; the dwellings of the workpeople, now continuously occupied, have very perceptibly improved; and if the condition of the saltworker, from a social and moral point of view, is still greatly lower than that of the average artisan, it is far higher than it ever has been, or, indeed, could be, under the old system. The reformation thus effected has also been materially aided by an alteration in the arrangement of the work introduced about five years ago. Formerly, one man only was usually appointed to take charge of each pan both by day and night, and was paid at the rate of 1s. 10½d. per ton of salt manufactured. In place of this system, what is termed ‘shift work’ is now universally adopted at the Stoke Works. Two men, one for the day and one for the night, are appointed to each pan, and receive 2s. per ton proportionally divided between them, the higher rate of payment being compensated by the additional amount manufactured under the new system. Three assistants

are required to each pan, who are paid by the men in charge of it out of their receipts for the salt manufactured. Much of the work can be done by boys and girls, and a father, by taking his children as his assistants, could make a considerable addition to his wages. A strong inducement is thus held out to parents to employ their children in such a manner as wholly to preclude their chance of obtaining any education, although at Stoke the inducement no longer exists in the case of girls. All the work is paid by the piece, and even in processes apparently so simple, an amount of judgment, experience, tact, and dexterity is required which makes a wide difference between the wages of a good and a bad workman. A fair workman, on an average, at 2s. per ton, can, it is calculated, make about 28s. per week. Each head of a pan is paid 22s. weekly on account, and the balance is settled monthly, the work being appraised by the foreman of the salt works, who rejects or reduces the allowance for work in any way faulty or imperfect. About 500 hands are employed at Stoke Works, and the average amount of salt of all kinds manufactured is about 3000 tons per week, with a consumption of from 1500 to 2000 tons of fuel.

“Previous to 1823, when the duty on salt, then as high as 15s. per bushel, was repealed, the entire annual produce of Droitwich did not amount to more than 9000 tons, the entire produce of Worcestershire being now about 200,000 tons per annum. The Cheshire salt works are capable of producing 1,000,000 tons per annum, but the supply being immensely in excess of the demand, many works are always standing still, both in the Cheshire and Worcestershire districts. The export trade of Worcestershire is about 50,000 tons annually; that of Cheshire about 650,000 tons.

“The price of salt for many years has ranged within very narrow limits. Monthly meetings are held by the manufacturers, as in other trades, and arrangements are made as to the rate of wages, the prices to be charged, and other matters affecting their common interests. The number of ‘small masters’ in the trade, however, renders any effective combination among the manufacturers as difficult as the introduction of any substantial reform in the habits and condition of the workpeople. A large portion

of the trade in the aggregate at Droitwich is in the hands of such masters, who, not possessed of sufficient capital to undertake the manufacture on a scale large enough to permit the adoption of expensive improvements in machinery, or in the system of working and payment of wages, are still able, by employing their own family as workpeople, to produce salt at a rate so low as to render it difficult for those able to initiate the necessary reforms to realize an adequate remuneration from them. On the whole, therefore, although the experiment tried at Stoke has, we believe, been commercially as well as socially successful, and must in the long run materially affect the condition of the saltworkers, there is but little immediate prospect of their making any great general advance in the social scale. For the present the public is able to purchase salt at a price possibly lower by some infinitesimal fraction than it would be if the manufacture were entirely in the hands of large proprietors and the employment of women and children strictly prohibited; but the advantage is dearly purchased by the continued existence amongst us of a class of laborers which ranks below that even of the working colliers."—*London Chem. News*, Feb. 22, 1867.

VIBURNUM PRUNIFOLIUM IN THE TREATMENT OF THREATENED ABORTION.

By D. L. PHARES, A. M., M. D., of Newtonia, Miss.

This small tree grows in rich, dry woodlands from Florida to the Mississippi river, and northward. For description, see Chapman's "Flora of the Southern United States," and other works. The part used is the bark, 3 ss to 3 i, in powder; infusion f 3 ss; or saturated tincture f 3 i.

It is nervine, antispasmodic, tonic, astringent, diuretic, and may be used to very good purpose in urinary affections, ophthalmia, aphthous sore mouth, chronic diarrhœa, dysentery, indolent ulcers, etc. It is an excellent remedy in colic, cramp, spasms, palpitation, and other affections incident to pregnancy, or arising from uterine disorder, and for after pains. But it is particularly valuable in preventing abortion and miscarriage, whether habitual

or otherwise—whether threatened from accidental cause or criminal drugging.

It tones up the system, preventing or removing those harassing nervous symptoms that so often torment, wear down, and disqualify the pregnant woman for the parturient effort. It enables the system to resist the deleterious influences of drugs, so often used for the purpose of procuring abortion. It is well known that the inner bark of the cotton root is used by many to induce miscarriage—one pint of the strong decoction being sufficient for this purpose. The regular exhibition of the viburnum completely neutralizes the effect of the gossypium, compelling the delinquent mother, however unwilling, to carry the foetus to full term. Some farmers, on whose plantation I have used this medicine, and who have seen much of its effects on negro women who always managed to miscarry, declare their belief that no women can possibly abort, if compelled to use the viburnum. This may be claiming too much for it; but it has certainly prevented abortion in every case in which I have ordered it for the purpose. Negatively, miscarriage has never taken place, so far as I am informed, in any case in which this medicine was used as a preventive.

[We omit the cases adduced to support the views of Dr. P., but may remark that they appear to be favorable to the value of the viburnum.—ED. AM. JOUR. PHARM.]

I have heretofore, for some years past, made known the use of this valuable agent, in conversations with members of the profession, as well as by letter. Its value as a medicine is so well ascertained as to justify a lengthy article in print, and its general use by the medical profession. The bark may be gathered at any time, but is best, perhaps, gathered in October and November. When practicable, I have preferred obtaining it from trees in open, exposed situations. Situation materially affects the qualities of plants. A plant, for instance, which, gathered on the level of New Orleans, is inert; gathered here, is probably the best remedy in the world for tetanus; of which more another time.—*Southern Jour. of Med. Sciences*, February, 1867, from *Atlanta Medical and Surgical Journal*.

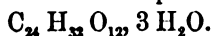
ON CONIFERINE, A GLUCOSIDE CONTAINED IN THE CAMBIUM OF THE CONIFERÆ.

By M. W. KUBEL.

This substance, analogous to Salicine, was discovered by M. Hartig in the "cambium" of several coniferous trees, *Abies excelsa*, *Abies pectinata*, *Pinus Strobus*, *P. Cembra*, *Larix Europæa*; it probably exists also in other species. From its origin the name of Coniferine was given to it by M. Hartig, who left the chemical study of it to the author.

The "cambium" is collected by scraping the surface of the wood recently deprived of its bark, and pressing the mass thus obtained; the thick juice is boiled to coagulate the albuminous matters it contains, which coagulum encloses the cells, the amylaceous matter, etc.; the filtered liquid is then clear, of a sweetish bitter taste; by evaporation to one-fifth of its volume, it deposits a large quantity of Coniferine in acicular crystals. The syrupy liquor which accompanies them possesses a very sweet taste, and contains a sugar closely allied to cane sugar. The crystals of Coniferine are re-dissolved in water, decolorized by animal charcoal, and finally crystallized from weak alcohol.

Pure Coniferine forms slender needles of a silky lustre, containing water of crystallization, which is lost at 100° C.; they are efflorescent. It melts at 185° C.; at a higher temperature it turns brown, and ultimately carbonizes, evolving an odor of burnt sugar. Its composition corresponds to the formula,



It is but slightly soluble in cold water, which dissolves only 0.51 per cent., but boiling water dissolves it with facility, absolute alcohol scarcely at all, and it is quite insoluble in ether.

The aqueous solution has a slightly bitter taste, it deviates the plane of polarization to the *left*, it precipitates neither acetate nor sub-acetate of lead, and gives no coloration with ferri chloride. Boiled with weak sulphuric or hydrochloric acid, it turns thick owing to the separation of a resinous substance of a slightly bluish color, emitting, at the same time, an odor of vanilla. The precipitate darkens in color by drying; it dissolves in soda, forming a yellowish solution, from which it is again thrown down by acids; heated, it evolves a very aromatic color. The liquor

filtered from this precipitate is *dextro*-rotatory and contains sugar, the presence of which may be recognized by cupro-potassic tartrate.

Coniferine presents a characteristic reaction. Whilst Salicine is turned red by concentrated sulphuric acid, Coniferine turns a deep violet; on adding afterwards a little water, a precipitate is formed, which colors the liquid a deep indigo blue, and which is probably the same substance as mentioned above.

Cold hydrochloric acid dissolves Coniferine without change of color, but if the solution formed is heated and evaporated, the same indigo-blue precipitate is formed.

Sulphuric acid is a good reagent for recognizing this substance. It is sufficient to touch a fresh-made cut in a tree of the family Coniferæ, in order to ascertain the presence of Coniferine.—*London Pharm. Journ.*, February, 1867, from *Journal f. Prakt. Chemie*, t. xcvi. p. 243.

ON THE YELLOW AMORPHOUS OXIDE OF MERCURY AND ITS APPLICATION IN CONJUNCTIVITIS AND CORNEITIS PHLICTENULOSA.

BY DR. PAGENSTECHER, Wiesbaden.

Red precipitate, the red oxide of mercury, has hitherto played an important part in the treatment of the superficial diseases of the eye, and in many instances constitutes the basis of several secret popular remedies. It is especially used in various kinds of blepharitis, in the form of an ointment, and valued by every oculist as a very favorite remedy. In diseases of the conjunctiva, and cornea too, when the object of the surgeon was to produce a stimulant or alterative effect, we find in the "*Pharmacopœia*" several compound ointments of this description recommended. But these ointments mostly possess the disadvantage of being inapplicable to all these forms of disease, and especially so to conjunctivitis and corneitis phlyctenulosa, being often found to irritate too much. Numerous and prolonged trials that I instituted years ago, proved to me that the red precipitate in ordinary use was, from its crystalline form, not sufficiently finely divided, and consequently did not act uniformly on the surface of the diseased membranes; very often, too, got retained in the

folds of the mucous membrane, and there set up a caustic action, which was rather prejudicial than otherwise to the subsidence of the disease. I became positive of this fact from some experiments I instituted with this substance, which was first reduced by many hours' trituration to as fine a powder as possible, using, as a vehicle, fat, which melted quickly from the natural warmth of the conjunctiva. Thus the remedy was, by the movements of the lids, equally distributed over the diseased surface; and at the same time, the probability, or rather the possibility, was avoided of any irritation being produced by its remaining too long in the conjunctival sac. Even these experiments yielded by far more favorable results. But the ointment was rendered still more perfect when I, acting under the advice of Dr. Hoffmann, substituted the yellow amorphous oxide of mercury. This preparation, which up to that time (1856) had found no place in the pharmacopœia, but, as well known to chemists, possesses the great advantage of being in a state of the finest possible division, prepared, as it is, by precipitation; and being altogether destitute of any crystalline form, it does not, like the red precipitate, adhere to the conjunctival tissue by any fine points and angles. But this preparation differs materially not only in form, from those which have hitherto been employed, but also in its chemical properties, which explain and render intelligible the results obtained in practice. I may be permitted to give the preparation of the ointment in Dr. Hoffmann's own words:—

“Two forms of oxide of mercury are recognized:—

- 1st. The crystalline or red oxide, prepared by the dry method, and commonly known as red precipitate, constituting the very common remedy; and
- 2d. The amorphous, or yellow oxide, prepared by the wet method by precipitation; up to within a few years unknown to the pharmacopœia, although it is indubitably preferable to the first.

The common red precipitate is rendered applicable to practice by being triturated in a porcelain mortar till no more brilliant crystalline points can be perceived: a powder is thus obtained, which is quite soft, and when rubbed between the fingers no longer imparts any gritty feel. If this, after being prepared in

the most careful possible way, is submitted to the microscope, it may, under a magnifying power of even 120 diameters, be recognized as a mass of broken crystals. The point up to which the trituration should be continued, which forms the measure of the fineness of the division, is in this method uncertain and inconstant. Thus this preparation occurs in different degrees of fineness in different shops; and as its efficacy is intimately connected with its fineness, the surgeon gets preparations which act with unequal strength.

For obtaining, therefore, a preparation uniform in its effects, and in the finest possible state of division, the yellow precipitate, which is thrown down, is highly to be recommended. Thinking this would also prove a far more energetic preparation, I, in 1856 for the first time, prepared some, and recommended its use to Dr. Pagenstecher in his eye-practice, instead of the common precipitate, and found my anticipation most gratifyingly confirmed. The mode of preparing the yellow precipitate, although well known, may be still worth mentioning. Care must be taken in the precipitation to obtain a pure oxide, and not any of its compounds, to which precipitates of mercury have a great tendency—a fact which might detract from the efficacy of the preparation. The precipitation is effected by adding a solution of the chloride of mercury to a solution of potash, in such a way that there is always an excess of the latter. After the precipitate has deposited itself, the supernatant fluid is at once poured off, the precipitate thoroughly washed with distilled water, and dried by a gentle heat, with exclusion of daylight. Thus prepared, the yellow precipitate has a light-yellow (that of the yolk of egg) color, and is an exceedingly fine powder, which, even under the microscope, appears completely amorphous. In addition to both the above signalized properties, it differs from the ordinary precipitate in its chemical behaviour, being much more quickly acted on by reagents. A solution of oxalic acid, which acts on the red oxide only after boiling, very quickly changes the yellow oxide, even at the ordinary temperature, into the white oxalate. The preparation of hypochloric acid gas depends on the property the yellow oxide of mercury possesses of decomposing in contact with chlorine gas; the results being hypochloric

acid and chloride of mercury ; whereas the red oxide undergoes, with chlorine gas at the ordinary temperature, hardly any change. This difference of chemical behaviour of the two oxides constitutes a different degree of resistance to the various agents they are submitted to, and is explained by their different states of cohesion. In respect to the use of the yellow precipitate for eye-ointments, I may be allowed to say a few words on the vehicle of the ointment. The most perfect vehicle for an eye-ointment must be very soft, without, however, being too fluid, lest the heavy oxide sink to the bottom ; but when in contact with a moderate heat of the body, it must completely melt, so that the preparation it contains may become quickly and uniformly diffused over the eye. Besides this peculiarity of consistence, the vehicle must be, as far as possible, indifferent in its behaviour to the oxide, and exhibit the least possible tendency to rancidity, which might exert a deoxidizing, reducing action on the oxide. Numerous experiments with hog's lard, butter, glycerine, glycerine ointment, and mixed fats, have led me to give the preference to the last ; and I recommend either the mixture of spermaceti, wax, almond-oil, and rose-water, known as 'cold cream,' only omitting the water, as this favors rancidity, and substituting for it quantities of almond-oil, varying according to the heat of the weather ; or a mixture of butter, of cocoa, and almond-oil, likewise proportionate to the temperature. In both compounds the almond-oil must be as fresh as possible, and had best be prepared by the apothecary himself."*—*Braithwaite's Retrospect, January, 1866.*

* As regards the strength of the ointment, I generally use one drachm of oxide to one ounce of fat. This may appear very strong to some, but experience amply shows that, applied in proper cases, it does not in any way irritate too much. Idiosyncrasies may, of course, be observed, as in every remedy ; and if the ointment in a given case irritates too much, its strength may be reduced to 30 grs. of oxide to the ounce. I may further remark, the two constituents of the ointment must be rubbed up to a most intimate admixture, if it is to act well. The following are, then, the two formulæ :—

- R. Hydrarg. oxydat. flavi, gr. xxx. (via humida parati). Ung. cetacei, ℥ ss. Misce exactissime et fiat unguent. ; or.
- R. Hydrarg. oxydat. flavi, gr. xxx. (via humida parati). Ung. cetacei, ℥j. M. exactiss. et fiat ungent.

THE PREPARATIONS OF CONIUM MACULATUM OF THE
BRITISH PHARMACOPŒIA, 1864.

BY JOHN HARLEY, M. D., LOND., F.L.S.,

(Assistant Physician to King's College Hospital, and to the London Fever
Hospital, etc.)

In furnishing four preparations,—poultice, juice, tincture, and extract,—the *Conium maculatum* occupies a prominent position in the British Pharmacopœia. Yet, perhaps, there is no plant in any *Materia Medica* of whose medicinal value we have less assurance than that of Hemlock. It is commonly reputed to be a very poisonous plant, and medical practitioners of the present day partake of this opinion, and prescribe it in very small doses.

The object of my inquiries is to ascertain how far this impression is correct, and at the same time to determine the medicinal value of its preparation more accurately than has yet been done.

I have occasionally prescribed the extract and tincture of the London Pharmacopœia in much larger doses than are usually given, but without effect. Negative results have been too uniformly present to allow me to attribute them, in every case, to carelessness in the manufacture or preservation of the particular drug used; and a very old impression that the potency of the plant is greatly exaggerated, has, for several years past, gained strength in my mind. Wishing to give the officinal preparations fair trial, I have long waited for an opportunity of getting the fresh, well-grown plant in its proper season, so that I might have a sound basis for my experiments.

On mentioning the subject to Mr. Hemingway, the distinguished pharmaceutical chemist, of Portman Street, Portman Square, he has most kindly relieved me of my chief difficulty, and while he has given me the benefit of a most cordial interest in the matter, he has provided me with most reliable means for conducting my experiments. The first object of my inquiries has been the—

Tinctura Conii fructūs.—The tincture with which the following observations were made, was most carefully prepared by Mr. Hemingway, in the early part of November last, under my own inspection. In investigations of this kind it is of fundamental

importance to ascertain the characters of the materials employed and the processes adopted. I shall not scruple, therefore, to enter into a somewhat minute description of them.

Preparation of the Tincture.—Two ounces and a half of the powdered fruit, mixed with fine sand, in order to separate the vegetable particles, and bring the spirit into more ready contact with them, were packed in the percolator, with a layer of sand above and below, the lower aperture of the percolator being closed with a piece of wash-leather. The fruit was then exhausted by the passage, drop by drop, and at a temperature of 62° F. of 3xx of proof spirit. The percolation was preceded and occasionally interrupted by maceration,—the one process being substituted for the other by a slight rotation of the stopper. The supernatant spirit was preserved perfectly colorless by the upper layer of sand during the whole of the time, and thus fresh portions of pure spirit were constantly brought into contact with the separated fragments of the fruit. It is obvious that no more perfect process of exhaustion than this can be devised. It is one which Mr. Hemingway tells me he has constantly adopted in the preparation of tinctures, and it certainly appears desirable that such a thoroughly practical, cleanly, and effectual process should be universally prescribed for the preparation of this and similar pharmaceutical products.

The fruit used was a fine specimen, and probably of this year's growth. It was clean, and free from admixture with other umbelliferous fruits. The albumen was firm and solid, the commissure convex, the groove indicating the involution of the albumen broad and deep, and the crenations of the ridges well formed—all of which I take to be essential characters of a well matured fruit. My friend Professor Bentley has also examined the fruit and pronounced it mature and good. The powder was prepared by means of a fineish hair sieve, and *without the application of heat*. It evolved a strong heavy mousy odor.

When 14 ounces of the spirit had percolated, I collected f 3ss in a watch-glass, and allowed it to evaporate spontaneously. Only a slight yellowish-brown film of varnish remained upon the glass. The last six ounces of spirit came through colorless.

Mr. Hemingway exposed *the marc* to powerful pressure, and

obtained about two ounces of colorless spirit rendered turbid by a little greyish feculent matter. On examining this fluid, I found that it contained minute spherules of a colorless fixed oil. After exposure to the light for a few days the oil assumed a bright sap-green color. The whole was evaporated to dryness over a water-bath, and the oil separated from a minute portion of brown residue, by means of ether. *This fixed oil* was of an emerald-green color, and possessed an odor resembling that of boiled linseed oil, and a nauseous rancid and bitter taste. It weighed 2 grains. I applied to the eye, and swallowed a drop of it without any result. Its specific gravity was less than that of proof spirit (0.920).

The following are the *characters of the tincture*:—Reaction slightly acid, color light greenish-brown with an internal opalescence, a strong mousy odor. A mixture of f 3ss of the tincture and f 3j of water was nearly colorless, but after exposure to light and air for twenty-four hours, it had assumed a leaf-green color. This change is probably characteristic and depending upon a resinous matter allied to the green oil above described. It is no doubt one of a similar nature to that which affects guaiacum resin, but unlike this substance, neither the tincture nor the oil were rendered blue on exposure to protoxide of nitrogen.

In order to ascertain the physiological effects of the tincture, I selected two individuals,—a weakly emaciated woman, M. A. R—h, aged thirty-seven, and myself.

I began, November 11th, by taking f 3ss, and increased the dose f 3ss each day for seven succeeding days, so that on November 18th I took f 3iv, on the 19th I took f 3v, and on the 20th f 3vj. On the 21st I was called out of town, and was thus obliged to intermit my experiments for a few days. On the 28th of November I began again by taking f 3vj. On each of the three following days I increased the dose by f 3ij, taking f 3viij, f 3x, and f 3xij, on November 29th, 30th, and December 1st respectively. I did not take any conium on the 2d of December; on the 3d I swallowed f 3ij in Mr. Hemingway's presence.

The quantities above stated were taken in single doses, mixed

with a little water, from $1\frac{1}{2}$ to $2\frac{1}{2}$ hours after breakfast. In order that the body should be well prepared for the poison, I took, most mornings, on getting out of bed, 3j of bicarbonate of potash in a draught of water, sometimes alone, sometimes with a small proportion of tartaric acid. By this means the urine was preserved alkaline until late in the afternoon. The other mornings I purposely abstained from this or any other preparative measure.

I carefully looked for effects, but found none after any of the doses, excepting a stimulant action from the larger quantities of spirit. There was no disorder, nor diminution of muscular power. The pupil, definition in the vision of near and distant objects, the pulse and all the functions remained in their usual state, and the secretions were active and normal. During the whole of the time I was working harder and longer than usual, and sleeping less; nevertheless there was no sense of fatigue, neither drowsiness nor tendency to inaction. Every other day I was actively engaged with body and mind, and usually walked from four to seven miles. On the alternate day I remained quiet, and was chiefly employed in study. Immediately after taking the 3xij of tincture on the 3d of December, I sat down and wrote my letters, and then entered upon some microscopical investigations, and continued them, with a single break of an hour, for eight hours consecutively. On this and other similar occasions I retired to bed without the feeling of mental fatigue which I frequently experienced after prolonged microscopical work. It so happened, in fact, that at the time I was following my experiment upon the tincture of conium, I was in vigorous health, and this was in no way affected by the drug.

The other subject of my experiments was in a very different condition. She was a pale, delicate, emaciated woman, and confined to bed by the pain and constitutional disturbance attendant upon the formation of a very large abscess in the right loin. Her pulse was 108 and feeble, and she was restless and unable to sleep. The abscess was opened on November 13th, and a pint of pus discharged. The same night I ordered as an anodyne f 3ij of the tincture above described, and directed the dose to be increased each night, provided, as in my own case, no

effect should follow. She slept well. On the following night, f 3iij were given, and there was no sleep. On the 18th she took f 3ss at night, but did not sleep well after it. On the 19th f 3vij were given, and she had a good night's rest. Having used her supply, the conium was suspended for a few days, and opiates (*mxv to mxxx tincturæ opii*) administered instead. Meanwhile the abscess was closing, the appetite returning, and the health rapidly improving. On December 1st she took f 3j, and on the 2d f 3iss, which exhausted my supply. On carefully examining this woman from day to day, and with special reference to the effect of conium, neither Dr. Collie, one of the resident medical officers of the hospital, nor myself, could detect any result. Sleep followed some of the doses, but was, no doubt, totally independent of conium. Great relief followed the evacuation of the matter, and her health began to improve directly afterwards. She is now convalescent.

Examination of the Marc.—In order to make my experiments more satisfactory, I subjected the marc which Mr. Hemingway returned to me to the following process:—Placing it again in the percolator, I passed a solution of 3j of caustic potash in f 3viij of water through it, and subsequently washed it with water until it passed through colorless; f 3xiv of dark brown fluid, resembling tincture of henbane in depth of color, were thus procured. I subjected this to distillation, drop by drop, collecting the first ounce and a half separately. I allowed f 3vij more to distil, and set this aside. I then put one-half of the marc (which had been exhausted by spirit and solution of potash) into the retort to the remaining fluid, and distilled f 3iv more. Having satisfied myself that these three fluids differed in no respect from each other, they were mixed, and presented the following physical and chemical characters, which are those of a dilute aqueous solution of conia:—Colorless at first, but becoming brown on exposure, a dirty looking, greyish, flocculent scum of greasy matter floated upon its surface; odor rank and disagreeable, yet somewhat resembling elder-flowers; taste partook of the smell, it somewhat resembled hydrocyanic acid, and left a slight acrid impression. Reaction alkaline; nitric acid added to a few drops in a test tube produced, after a few seconds, violent

effervescence from the liberation of binoxide of nitrogen, and a yellow liquid resulted. When the action was moderated by spreading the fluids on a porcelain plate, a greenish-yellow or bright green turbidity appeared, and after a few minutes bubbles of binoxide of nitrogen began to form, and the evolution continued until the green color was removed, and a faint yellowish fluid remained. Solution of nitrate of silver produced a dirty white curdy precipitate, which readily dissolved in ammonia. When dried and heated, a flame ran instantly through it; and on further heating the charred residue, only metallic silver remained. Solution of chloride of mercury caused an abundant white precipitate, which, when boiled with potash, became yellow and heavy, and evolved an alkaline vapor. When heated, the precipitate blackened, evolved mercurial vapors, and ultimately disappeared.

With solution of acetate of lead, the fluid gave a heavy drab-colored precipitate. With sulphate of copper, a pale blue deposit. Both precipitates dissolved in dilute nitric acid, the former with effervescence.

This fluid was carefully preserved, and, on December 4th, I took f 3ss at 11 A.M., and f 3j at 5 P.M. On December 5th, I took 3ii at 10:30 A.M., and 3iij at 3:30 P.M. On the 6th, I took a single doze of f 3vj. On the 7th, a single dose of f 3x. On the 8th, a single dose of f 3xij, and on the 9th a single dose of f 3ij. I then subjected the remainder to the same reagents as before, and found that the fluid possessed the same reactions as it did on the day I distilled it.

No effect followed any of the doses. After taking the last dose I walked across the square to church, and, during the early part of the service, thrice experienced, within as many minutes, a momentary fluttering in the cardiac region, such as precedes faintness, but I could not fairly attribute it to the conium, for I awoke with a headache and slight nausea, and these had not altogether subsided at the time I experienced the above-mentioned sensation. Of this there was no repetition, the remainder of the headache passed off, and I was well and active during the rest of the day. During the prosecution of these experiments upon the tincture and the distillate from the marc, I abstained from alcoholic or other stimulants.

The result of these experiments goes far to prove that the *tinctura conii fructus* recently introduced into our Pharmacopœia is, at least in all proper medicinal doses, an inert preparation. From Geiger's and Dr. Christison's experiments it appears that the fruit contains a larger quantity of conia than the other parts of the plant, but the fact that the green fruits contain a much larger proportion than the dry, seems to have been overlooked. We know that the active principle of the poppy is more abundant in the circulating juices of the green fruit than in any other part of the plant, and that the quantity contained in the fruit diminishes in proportion as it becomes hard and dry. It is very probable that this is the case with the conium, and that we must look for the greatest accumulation of its active principle in the green immature fruit. One question relative to the tincture still presents itself, viz.: does alcohol possess an influence antagonistic to that of conium, and, if so, how great is that influence?

78 Upper Berkley Street, Portman Square, W.,
Dec. 14, 1866.

(To be continued.)

ON THE PURIFICATION OF QUINOIDINE.

M. de Vry, in the "*Journal de Pharmacie et de Chimie*," says: "Commercial quinoidine is never pure; M. de Vry has proved it to contain sometimes as much as 30 per cent. of foreign matters. His purifying process is founded on M. Pasteur's observation that nine parts of quinoidine triturated, and kneaded a long time in a mortar with a diluted solution of two parts of neutral oxalate of ammonia, and by entirely dissolving, while disengaging ammonia, and abandoning the foreign matters. But while M. Pasteur operated at the ordinary temperature, M. de Vry advises the use of heat.

The following is the process by which he proposes to purify quinoidine, and consequently render it fit for medical purposes: Boil, in an iron vessel, nine parts of quinoidine, with a diluted solution of two parts of neutral oxalate of ammonia, until ammonia ceases to be disengaged. As part of the insoluble matter will attach itself to the sides of the vessel while boiling, add

distilled water from time to time, so that this part may be covered during the boiling, and thus be continually in contact with the ammoniacal solution. As soon as ammonia ceases to be disengaged, let the liquid get quite cold, and if the addition of water does not cause it to become turbid, dilute it with that liquid. Then filter the liquid, and precipitate it in a capsule by means of an excess of caustic soda solution.

Collect by means of gentle heat, the glutinous precipitate at the bottom of the capsule, then decant the clear alkaline liquid, and wash the precipitate of quinoidine several times in distilled water. Then expose the still glutinous quinoidine thus purified for some time to a temperature of 100° to 110° C., which will thus lose the little water it retained, and finally become, when cold, hard and friable. Oxalate of ammonia is used for the purpose of getting rid of the lime usually contained in commercial quinoidine.—*The Drug. Cir. and Chem. Gaz.*

ON THE SEVERAL MODES OF ADMINISTERING OLEUM MORRHUÆ.

By JOSEPH ADOLPHUS, M. D.

Cod oil to many stomachs is exceedingly nauseous, and it is with difficulty that such persons are induced to take it. This is particularly so of the darker shades of the oil. Often it is a severe task on the physician to devise ways and means whereby an intolerant stomach may be induced to retain it.

The greatest objection I have encountered is the complaint many persons make, that they "taste the oil for a long time after taking it." This is induced by three causes. 1st, a deep seated prejudice against the oil. 2d, a singular state of the nervous coat of the stomach, which prevents the digestion of the oil; and 3d, from idiosyncrasy. The first is overcome by persistence, cautious management and small doses of the oil. I have often commenced on five drops of oil three times a day, increasing by one or more drops on each occasion till I have got the stomach accustomed to and tolerate the oil in 3ss. doses. Three cases in particular, delicate females, who so

utterly rejected the oil as to have severe seasons of nausea come on even on "mentioning oil to them."

I commenced by inducing these ladies to take five drops of oil and lime water three times a day. The effect was encouraging. The doses were gradually increased, and in eight days one did take a teaspoonful at a dose. In another the same dose was tolerated in two weeks. And the third succeeded in taking the same quantity in twenty-three days. At the expiration of forty days each took a table-spoonful three times per diem without any effort. These were the worst cases that have fallen under my care.

The second is a specific form of dyspepsia engendered in the submucous tissue of the stomach. The digestive force appears to be seriously disturbed. Acid eructations, or cardialgia, or a peculiar form of neuralgia of the organ occurs, or the patient complains of a disagreeable weight in the "pit of the stomach," or the action of the heart is disturbed both in frequency and regularity. The sympathetic distribution coming from the semilunar ganglion and the solar plexus and the pneumogastric nerve, form a dense net-work of nerve tissue in the stomach. When any derangement is present, more particularly in the sympathetic centers, cod oil appears to be most obnoxious, and increases all the difficulty. This is overcome readily by the acetum opii ("Black drop,") or by acetate of morphia.

I have found the union of the oil with lime water just sufficient to form a soap, and flavored with oil of bitter-almonds to be an excellent form. A gentleman now under my care, showed so severe a form that I despaired of even succeeding to induce him to keep the oil down. At length I received a chest of oil from John C. Baker & Co., Philadelphia; this oil set remarkably well on his stomach. This gentleman informed me that his stomach tolerated the Philadelphia oil in a remarkable manner.

But opium appears to quiet the abnormal condition of the sympathetic ganglion, especially the prevertebral center in front of the aorta and the plexus of the celiac axis. Saturated tincture of lobelia seeds, in very small dose, *far short* of nausea, with the morphia act remarkably well in many cases.

I have frequently found that giving the oil but once a day, between supper and bed time, for the first week, and then adding a dose two hours after dinner, works well. Chewing a clove before taking the oil prevents the taste being impressed. An excellent remedy is the oxalate of cerium in this state of the stomach. I have repeatedly ordered it, either alone or with extract of conium, with the happiest results. Here I place my confidence. But I never neglect uniting the oil with the lime water.

The third condition must be overcome by adding to the oil its bulk of glycerine. I prefer Bower's of Philadelphia. Chloroform thoroughly mixed with the oil by long agitation has overcome the difficulty. But it must never be lost sight of that, whenever any difficulty is experienced in taking the oil, it must be administered in *very small* doses, so as to gradually and cautiously accustom the stomach to the remedy. Furthermore, many cases, in which the oil was at first exceedingly repugnant and disgusting, by perseverance and the cautious adoption of adjuvants, &c., all repugnance was eventually overcome, and the greatest benefit possible was derived and experienced from its use.

I have found the oil manufactured by John C. Baker & Co., of Philadelphia, the best I have ever used. It is remarkably pure. One patient assured me "that it tasted like almond oil," while a young lady observed to me that she "could eat it as a relish on her bread."

Often it occurs that the oil after its passage from the stomach into the duodenum causes a disturbance in the bowels. I have relieved this by ordering, an hour after the oil is taken, the aromatic spirits of ammonia. At other times small portions of sulphur taken with the oil accomplishes the purpose. But these cases are true cases of duodenal dyspepsia and require treatment for that. To accomplish a cure in such cases I generally order: *R.* Reduced Iron ℥ii., Hypophosphite Lime ℥i., Hydrastine ℥iv. [verberin.—ED.]; triturate well; take four to eight grains three times a day. A decoction of Rhatany taken several times a day, works well. But if the tongue is red the hydrochloric acid with the tincture of iron is often the best

remedy. If it is white, pasty or broad and furred, I order bicarbonate of potassa and podophyllin, the latter in one-tenth grain dose, four or six times a day.

In this duodenal disturbance opium and iodine are splendid remedies, and aid the oil digestion greatly. Thus: *R.* opii pulv. gr. vi., iodine gr. ii., ext. nux vomica gr. iv.; triturate well and make into twelve pills. One or two for a dose, repeated as often as needed, but never less than three times a day.

In taking cod oil it must never be forgotten that the diet must be of the most nourishing kind and easily digested. But I cannot close without referring to the flour of malt as a part of the diet, especially of children, where there is any difficulty in the digestion of the oil; the malt flour made into pap with wheat flour and used as a constant food as nearly as is agreeable and consistent, during the first week and sometimes even as late as into the third.

By this means digestion of the oil will be most happily accomplished. In very many cases I have found that in combining the cod oil and the syrup of the phosphates of iron, quinine and strychnia, that both were heightened in their therapeutic action and tonic effect.

Hastings, Michigan, March, 1867.

[This article was received too late to be placed among the original papers.—ED. AM. J. PH.]

Minutes of the Philadelphia College of Pharmacy.

The Annual Meeting of the Philadelphia College of Pharmacy was held at the College hall, on the evening of the 25th March—thirty-four members present—the President of the College, Charles Ellis, presiding.

The minutes of the last meeting were read and approved. The minutes of the Board of Trustees were read by Mr. Alfred B. Taylor, Secretary of the Board. The minutes of the Board inform that the matriculants of the late session of the school of the College numbered about 160 and that, at the commencement on the 15th inst., the degree of Graduate in Pharmacy was conferred upon forty-two candidates, as follows:—

Allaire, Charles B.,	Aurora, Ill.,	<i>Soluble Citrate Magnesia.</i>
Archibald, Henry C.,	Philadelphia, Pa.,	<i>Sugar-coated Pills.</i>
Bartram, Ernest,	" "	<i>Our National Pharmacopoeia.</i>
Blissard, Jos. E.,	" "	<i>The Language of Prescriptions.</i>

Borhek, J. T., Jr.,	Bethlehem, Pa.,	<i>Gillenia Trifoliata.</i>
Boring, Ed. McC.,	Lancaster, "	<i>Eupatorium Perfoliatum.</i>
Bourke, Jos. M.,	Philadelphia, "	<i>The History of Pharmacy.</i>
Brown, Samuel A.,	" "	<i>Cypripedium Pubescens.</i>
Brown, Thomas J.,	Rockdale, "	<i>Bolatus Laricus.</i>
Buckman, James,	Bristol, "	<i>Hydrangea Aborescens.</i>
Carberry, P. J. L.,	Philadelphia, "	<i>Pharmaceutical Duties.</i>
Croft, Samuel F.,	Chambersburg, "	<i>Centaurea Benedita.</i>
Cuthbert, Richard W.,	Athensville, "	<i>Podophyllum Peltatum.</i>
Erwin, Bertine S.,	Bethlehem "	<i>Ricinus Communis.</i>
Haig, Charles R.,	Philadelphia, "	<i>Gentiana.</i>
Hambricht, Edwin A.	Mount Holly, N. J.,	<i>Melia Azedarach.</i>
Harding, Henry,	Philadelphia, Pa.,	<i>Hamamelis Virginica.</i>
Harzer, James M.,	Reading, "	<i>Carya Alba.</i>
Harry, Jacob,	Hagerstown, Md.,	<i>Adiantum Pedatum.</i>
Hays, N. W. C.,	Burlington, N. J.,	<i>Phytolacca Decandra.</i>
Himmelwright, F. E.,	Philadelphia, Pa.,	<i>Potass. Permanganas.</i>
Hoffman, John V.,	Baltimore, Md.,	<i>Krameria Triandra.</i>
Jones, Edward B.,	Medford, N. J.,	<i>Baptisia Tinctoria.</i>
Kurtz, Aug. M.,	Chester, Pa.,	<i>Sanguinaria.</i>
Little, Arthur H.,	Philadelphia, Pa.,	<i>Oxide of Zinc.</i>
Locustson, Jos. S.,	" "	<i>Physicians Prescriptions.</i>
McMinn, Jos. H.,	Williamsport, "	<i>Cornus Alternifolia.</i>
Moore, Charles C.,	Philadelphia, "	<i>The Dawn of Chemistry.</i>
Mosely, A.,	" "	<i>Agathotes Chirayta.</i>
Roche, William F.,	" "	<i>Nepeta Cataria.</i>
Shivers, Charles, Jr.,	" "	<i>Chenopodium Anthelminticum.</i>
Simes, Samuel,	" "	<i>Coptis Trifolia.</i>
Simpson, George T.,	" "	<i>Chiretta.</i>
Swain, George M.,	Newark, N. J.,	<i>Sumbul.</i>
Tait, Stewart,	Philadelphia, Pa.,	<i>The Relative Duties of Physicians and Druggists.</i>
Taylor, James,	" "	<i>Erigeron Canadense.</i>
Vandegrift, J. P.,	Haddonfield, N. J.,	<i>Hamamelis Virginica.</i>
Webb, Samuel W.,	Philadelphia, Pa.,	<i>Caulophyllum Thalictroides.</i>
Weichselbaum, J.,	" "	<i>Xanthoxylum Fraxineum.</i>
Weideman, Charles A.,	" "	<i>Spigelia Marilandica.</i>
Wike, Albert D.,	Sadsburyville, "	<i>Baptisia Tinctoria.</i>
Woodward, Charles E.,	Marshallton, "	<i>Lav. lanum.</i>

The minutes of the Board of Trustees farther inform that a portrait of Prof. Robert Bridges, M. D., was presented to the College by the Zeta Phi Society.

The subject of increased accommodations for the school of the College, which had engaged the attention of the Board, was discussed by the members, and, on motion, it was

"Resolved, That a committee be appointed by the College to confer with the committee appointed by the Board of Trustees, and to report to a special meeting of the College."

To this service the President appointed Robert C. Davis, Thomas H. Powers, Thomas P. James, John C. Savery, Henry N. Rittenhouse.

The minutes of the Board of Trustees also inform of the transfer of the Chair of *Pharmacy* to Prof. Parrish, and that of *Materia Medica* to Prof. Maisch; and that a course of instruction on *Botany* would be given during the summer months by Prof. Maisch. The Board altered the title of the Professorship of *Materia Medica* to that of "*Materia Medica and Botany*."

The following preamble and resolutions, offered by Prof. Parrish, were unanimously adopted:—

Whereas, This College has learned, by the reading of the minutes of the Board of Trustees, that an extensive collection of fine chemical and pharmaceutical preparations had been added to the cabinet of the College by Messrs. Powers & Weightman, manufacturing chemists of this city; therefore,

Resolved, That the thanks of the College are hereby tendered to Messrs. Powers & Weightman for their liberal and valued gift, and that it be placed in a separate case in the College hall.

Also, *Resolved*, That the thanks of the College are hereby tendered to our late President, Daniel B. Smith, for his valuable gift of ninety volumes of the *Annales de Chimie et de Physique*, donated to the library of the College.

The minutes of the Board of Trustees farther inform that a set of the *American Journal of Pharmacy*, as far as it could be completed, had been presented to the American Philosophical Society, in return for which, the Society had ordered the presentation to the College library of a set of their published transactions, and placed this College on their list of corresponding societies.

The report of the Publishing Committee was read and accepted, as follows:—

"The Publishing Committee respectfully report that the *Journal* has been regularly issued during the past year. Since the war, the list of subscribers has gradually increased, and the number now printed is the same as formerly. The subscription price remaining unchanged, while the cost of materials and labor have so much advanced, has deterred the editor from employing as many illustrations as would be advisable; but he hopes soon to have a change in this regard. Heretofore, the foreign exchanges have been but few. The Editor has made arrangements for visiting Europe the present season, and hopes to be able to increase these, and to obtain other facilities for the improvement of the *Journal*. During his absence, Prof. Maisch and Mr. A. B. Taylor will assume the editorial duties. The appended report of the Treasurer of the Committee will exhibit the condition of the finances."

This report shows the expenses of publication, the past year, to have exceeded the receipts from the *Journal* by the sum of \$175.

The report of the Committee on Labels exhibits a balance in the hands of the Treasurer of the Committee of \$626.33.

The report of the Treasurer of the Sinking Fund informs that \$400 had been paid on account of the debt of the College, leaving a like amount

yet due. This constitutes all of the old indebtedness of the College remaining unpaid.

The Treasurer of the Committee on Labels was directed to pay to the Sinking Fund Committee the sum of \$200, and to the Publishing Committee an amount sufficient to liquidate their indebtedness.

The resignation of E. R. Perrot was read and accepted.

A communication from Francis N. Figuero, island of Cuba, was referred to the Board of Trustees.

Prof. Procter read a translation of printed communications from the Society of Pharmacy in Paris, relative to an International Pharmaceutical Congress, to be convened in Paris in August next. The subject having been considered, it was resolved that this College appoint delegates to said Congress, and that they be elected by ballot.

A communication from Mr. Jacob Krummeck, Santa Fe, New Mexico, to the Corresponding Secretary, relative to some indigenous plants of that region, was referred to the Publishing Committee.

The Committee on Deceased Members made a verbal report through their Chairman, and were continued.

Written communications were read from Samuel F. Troth and Dillwyn Parrish, declining re-nominations for the office of Vice-Presidents. These declinations called forth a general expression of regret at the prospect of losing the services of our present valued and highly esteemed officers. On motion, the Secretary was directed to record the letters of declination on the minutes.

The annual election being ordered, Wm. J. Jenks and James T. Shinn, acting as tellers, reported the election of the following officers:—

<i>President,</i>	Charles Ellis.
<i>First Vice-President,</i>	William Procter, Jr.
<i>Second Vice-President,</i>	Dillwyn Parrish.
<i>Treasurer,</i>	Ambrose Smith.
<i>Recording Secretary,</i>	Charles Bullock.
<i>Corresponding Secretary,</i>	Alfred B. Taylor.

Trustees.

Robert Bridges, M. D.,	T. M. Perot,	Jas. T. Shinn,
T. S. Wiegand,	S. N. James,	S. S. Bunting,
D. S. Jones,	J. M. Maisch.	

Publishing Committee.

Charles Ellis,	Edward Parrish,	A. B. Taylor,
J. M. Maisch,	William Procter, Jr.	

Committee on Sinking Fund.

Samuel F. Troth,	Edward Parrish,	Ambrose Smith.
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Delegates to American Pharmaceutical Association.

E. Parrish,	Jas. T. Shinn,	H. N. Rittenhouse,
A. B. Taylor,		Evan T. Ellis.

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Delegates to the International Pharmaceutical Congress of Paris.

William Procter, Jr., Edward Parrish, John M. Muisch,

On motion, then adjourned.

CHARLES BULLOCK, *Secretary.*

INTERNATIONAL PHARMACEUTICAL CONGRESS AT PARIS, 1867.

Second Session of the International Congress of Associations and Societies of Pharmacutists, organized by the Society of Pharmacy of Paris.

In the sitting of the 16th of September, 1865, the International Congress of Brunswick decided that it would hold a second session of the Congress at Paris.

By a second resolution the Congress referred to a special Committee the duty of determining the organization of this session.

This committee was composed of the following members :

MM. de Schröders, for Russia; Robinet, for France; Beckert, for Austria; Rickher, for the Pharmaceutical Union of Southern Germany; Docter Bley, for the Pharmaceutical Union of Northern Germany.

The Committee decided that the second session of the International Congress will take place at Paris in 1867, and that its organization will be confided to the Society of Pharmacy of Paris.

In consequence of these decisions, the Society of Pharmacy of Paris has prepared the Regulations for the second session of the International Congress.

REGULATIONS.

1st. There will be an International Congress of Associations and Societies of Pharmaceutists of all Countries in Paris in 1867.

2d. The Congress will be formed exclusively by the assemblage of delegates of Associations and Societies of Pharmaceutists regularly constituted.

It will have for its object the discussion of scientific and professional questions interesting practical Pharmacy, and the consideration of the measures most appropriate for enabling Pharmaceutists to perform their mission and the duties they owe to the public interest.

3d. Each Association or Society will be entitled to delegate three of its members; but this delegation will have but one vote in the deliberations, so that each Society will possess but a single vote.

Nevertheless the three Delegates of a Society may individually take part in the discussion of propositions put in the order of the day.

Societies or Associations embracing all the Pharmaceutists of a country are entitled to represent themselves by three delegates for every one hundred members in the Society or Association.

4th. The Delegates of one Pharmaceutical Congress are not rightfully delegates to the following Congress.

5th. Delegates should possess written credentials emanating from the Society or Association they represent in the Congress.

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6th. In the first sitting the President of the Committee of Organization will proceed by ballot to the nomination of officers. These shall consist of, first, a President; second, five Vice-Presidents; third, a Secretary, and fourth, three Vice-Secretaries.

7th. The officers will be charged with the publication of the minutes.

8th. The various questions submitted to the Congress will be submitted to special committees for consideration and report.

9th. The discussions will generally be in the French language. For aiding the deliberations, the Commission will provide capable interpreters.

10th. No memoir on the questions before the meeting can be read but with the consent of the officers.

11th. Decisions will be made by a majority of votes.

12th. A Committee of Organization, designated by the Society of Pharmacy of Paris, and composed of the Titular members of that Society, will be charged with all the measures preparatory for the meeting of the Congress. It will receive the requests, propositions and communications of all Pharmacutists who think proper to address it. Memoirs which treat on the questions in the Programme should be sent positively before the 15th of June, 1867.

13th. The Committee will draw up, under the direction of the Society of Pharmacy of Paris, the Programme of the meeting of the Congress of 1867, and will publish it in good time in the largest number possible of Pharmaceutical Journals of all countries.

14th. Before the close of the second session, the Congress will nominate, if it so decides, a Committee to prepare for a third.

15th. Associations and Societies of Pharmaceutists who intend being represented in the Congress are requested to send in advance, and in all cases before the 1st of August, 1867, the names and addresses of their delegates.

16th. M. Robinet, Commissioner General, is empowered to conduct the correspondence relating to the meeting of 1867 at Paris, Rue de l'Abbaye, Saint-Germain, 3.

PROGRAMME.

Pharmacy in Europe at this time is in an unhealthy and critical condition, not less injurious to the true interests of society than to those of the profession itself. This critical situation has been explained by the Congress of Brunswick, and that body has given the results of its deliberations in the form of Resolutions, which represent the opinion of the majority of its members. These resolves have been expressed in the following terms:

1st. Pharmacy should be recognized by the State, not only as a simple department of industry, but as a learned corporation and as an integrant part of the Sanitary Body.

2d. Pharmacy ought to exercise a direct influence on the ordinances bearing upon its scientific and professional interests.

3d. Pharmacy should be protected by the State from the attacks on its rights, from whatever source they may arise.

Notwithstanding the wisdom of these views, the importance of the considerations which have suggested them, and the authority of the Assembly which has issued them, the question as to the *part* that Pharmacy should act in the civilized world, and the conditions necessary for its rational organization in relation to the social economy are too grave to be considered as definitely resolved.

Nobody at this day will deny the place due to chemistry and the part which belongs to it in social progress, yet few persons appreciate at its proper value the influence that Pharmacy has exercised on the rise and developement of modern chemistry.

It is therefore indispensable to revive again this fundamental question before the public assembly of the Societies of Pharmacy from all parts of the world, convened at Paris by the International Congress of Brunswick.

At this juncture, when various States seek with the greatest earnestness to generalize the employment of weights, measures and money of a uniform type, the Congress will naturally be led to recognize the necessity of a Codex or legal formulary which will be the guide for the Pharmacians of all countries. This Codex will insure uniformity of composition in the most important medicines that have been recognized by universal experience in the shops (pharmacies) of all countries.

For these reasons the Committee of Organization of the International Congress of 1867 propose the following questions :

First Question.—The Constitution of Pharmacy.

What character should be attributed to the Pharmacist? What are the functions he should perform and what conditions ought he to accomplish in order to acquit himself of his professional obligations ?

Second Question.—The consideration (study) of the means of compiling a Codex or legal universal formulary of official medicines, for which it is important to establish a uniform composition in all the *Pharmacies* of the civilized world.

Third Question.—Give the best and most practical means of determining the proportion of active principles, especially of alkaloids in the drugs containing them, and in the pharmaceutical preparations of which these drugs are the base, such as opium and the opiates, cinchona and the preparations of bark, etc.

The meetings will be inaugurated on the 21st of August, 1867, at noon precisely, in the session room of the Society of Pharmacy of Paris, at the Superior School of Pharmacy, Rue l'Arbalète.

The meeting will continue five days.

The Commissioner General,

ROBINET,

at Paris, Rue de l'Abbaye-Saint-Germain, 3.

[The above circular, enclosed with the following from the Committee of the Society of Pharmacy of Paris, was received by the Editor :]

SOCIETY OF PHARMACY OF PARIS,
International Congress of Associations and Societies of Pharmacologists.

SIR AND MUCH HONORED CONFREERE:

We have the honor of sending you the Regulations and Programme of the second session of the International Congress of Associations and Societies of Pharmaciens.

The Committee begs you to give these documents the greatest possible publicity, that the meeting of 1867 may exert, by its importance, a happy and decisive influence on the future of Pharmacy, the progress of the art and the public interests which are inseparable from them.

We hope that the nature of the questions proposed will engage the Pharmaceutical Associations of all countries, who send delegates to the Congress of 1867, which, also, will occur under unusual circumstances—during the International Exhibition.

Receive, sir and much honored confrere, the assurance of our devotion.

The members of the Committee,

MM. GUIBOURT, President,

BOUDET,

BUIGNET,

GOBLEY,

LEFORT,

MIALHE,

ROBINET, Commissioner General.

In the sitting of December 5, 1866, the Society of Pharmacy of Paris appointed MM. Dumas of the Institute, Bussy of the School of Pharmacy and Guibourt, President of the Society of Pharmacy, its delegates to the International Congress.

ROBINET, *Comm. Gen.*

Editorial Department.

TO OUR READERS. VISIT TO EUROPE.—The Editor of this Journal, having made arrangements to visit Europe during the ensuing spring and summer months, desires to offer as a reason for the untimely appearance of the May number his wish that but two numbers should be due before the period when he hopes to resume his editorial labors, (September 10th.) While absent, the Editor proposes to institute a correspondence with the Journal, and thus continue his connection with his readers; yet, the burden of the editorial chair will be sustained by the kind offices of his friends, Prof. Maisch and Mr. Alfred B. Taylor, of the Committee of Publication. The Editor takes this opportunity to ask the friends of the Journal for their aid, in the way of original contributions, during his absence, and to ask their friendly consideration for any delay which may arise from that cause. All communications referring to

editorial matters should be addressed to Prof. John M. Maisch, 1607 Ridge Avenue, Philadelphia, until September next. All business letters referring to the finances or distribution of the Journal must be sent to Charles Ellis, Son & Co., north-east corner of Seventh and Market Streets.

MR. PEABODY'S MUNIFICENCE.—The extraordinary liberality of George Peabody, in the endowment of literary and scientific institutions during the past year, 1866, is worthy of notice by every journalist to whom science and education is dear. One hundred and fifty thousand dollars were given to Harvard, to maintain a Museum and Professorship of American Archæology and Ethnology; \$150,000 to Yale College, for the establishment and maintenance of a Museum of Natural History, especially of the departments of Zoology, Geology and Mineralogy. Besides these gifts, the donor has already given \$1,000,000 to the Peabody Institute, Baltimore; \$250,000 to the institution bearing his name in his native town of Danvers, Mass.; \$25,000 to Phillip's Academy, Andover, Mass.; \$25,000 to Kenyon College, Ohio, both for the extension of instruction in the natural sciences and mathematics; \$20,000 to the library of the Maryland Historical Society, and several other smaller donations in Massachusetts and Vermont.

More recently we learn from the papers that a very large sum in cash and bonds, amounting to about two millions of dollars in all, has been intrusted to a board of gentlemen for the promotion of education in the Southern States. The influence of these noble gifts on the next generation must be sensibly felt, and will form a monument to the donor's munificence more deserving than granite or marble.

ON THE RELATIVE POSITIONS OF THE PHYSICIAN AND APOTHECARY IN THE SALE OF LIQUORS AND WINES FOR MEDICAL PURPOSES, AS REGARDS THE INTERNAL REVENUE LIQUOR LAW.—Whatever may be the practice of druggists and apothecaries in the sale of liquors without a license, the law of Congress is sufficiently explicit that they shall require a written prescription from the physician. Those apothecaries who conscientiously desire to act up to the legal requirements are met by the difficulty that physicians are constantly prescribing liquors, especially brandy and whisky, without writing a prescription for them. That large portion of the public who use liquors only as medicines prefer to get them, when needed, of the apothecary; and, unless he happens to be among the few who make liquors a business speciality and take out a license, he is unable to supply the demand legally—merely because the physician has not performed his part. The object of this article is therefore respectfully to request our medical cotemporaries to direct the attention of their readers, by some pointed remarks, to the importance, on all occasions when they prescribe liquors not in possession of the patient, to do it in writing. This course will greatly subserve the cause of temperance, relieve the

apothecary from a false position in the view of patients, and save him from the temptation to enter the liquor trade, to meet the difficulty arising from a limited legitimate demand for good liquors.

PHARMACY IN CHICAGO.—For several years past, the Chicago College of Pharmacy has been dormant, and ceased to exercise the functions it so bravely commenced with several years ago. Recently, several members determined to attempt the re-animation of the College; and, taking advantage of the reception of a fine set of specimens of chemicals, presented to the College by Messrs. Powers & Weightman, a meeting was called to examine them, and take action on the condition of the College, by a circular directed "to the Druggists of Chicago," by Henry Sweet, Secretary, dated Feb. 20, 1867.

By a notice in the *Chicago Republican* of Saturday, March 2d, we learn that a meeting was held on Wednesday, Feb. 27th, 1867, which resulted in the election of Mr. E. H. Sargent, *President*; George W. Buck and W. H. Muller, *Vice-Presidents*; James W. Mill, *Secretary*; J. P. Sharp, *Treasurer*; Albert E. Ebert, Henry Sweet, John F. Ehrman, William Reinhold and Emil Dreier, as *Trustees*.

Mr. Robert J. Brown, of Kansas, was elected an associate member; action was taken in regard to the extension of the cabinet, to which the specimens above alluded to were deemed a very valuable and important addition; and also steps were initiated to commence a library. It was determined not to revive the school of pharmacy at present, but to look forward to that and other measures for the amelioration of pharmacy in Chicago. We believe there is enough of the right material among the members to warrant success. What is needed most is a small corps of persevering, talented, self-sacrificing young men, who will do the nursing for a while until the latent energy of the body is completely revived. There are several of this class ready for the work, and there is no good reason why the Chicago College of Pharmacy should not attain to a solid and lasting condition of usefulness. A letter received from Mr. James W. Mill, since the above was written, speaks encouragingly of the feeling existing, and thinks it promises good results. The revival has our cordial good wishes, and it will afford unmixed pleasure to chronicle in this journal every advance made, until the Chicago College is firmly established, with a School of Pharmacy based on deep and broad foundations adequate to sustain a superstructure suitable to the future wants of so large a community.

PROF. BENJAMIN PIERCE, of Harvard University, has been appointed, by the President, the successor of Prof. Bache, as Superintendent of the Coast Survey. The appointment is said to give general satisfaction to scientific men capable of judging of the amount of labor and the kinds of talents required in this responsible position.

THE INTERNATIONAL PHARMACEUTICAL CONGRESS AT PARIS, 1867.—The Committee of the Society of Pharmacy of Paris have issued a circular of invitation to all regularly constituted Pharmaceutical Associations, to send delegates to the Congress to be held in that city in August next, and that our readers may have an opportunity to know its objects we have translated, as literally as possible, both papers, which will be found at page 280.

The matter was brought before the Annual Meeting of our College on the 25th of March, and delegates were appointed to attend the Congress. (See the minutes at page 276.)

The questions stated in the programme should be fully considered by our College, and its delegates should be duly instructed in its views, that the matter shall be more than a mere form. Great variations exist in the constitution of the pharmaceutical body in Europe; on the continent the influence of the governments is felt more decidedly in Russia and Germany than in France, and in England much less than in France, while in the United States Pharmacy is absolutely free from special legislation. The question, what degree of freedom from State interference is most advantageous to the progress and success of our scientific art, viewed in reference to the community, has been agitated in Germany for several years, and some of our foreign brethren are interested to know how our unlicensed pharmacy meets the demands which in all situations must be made on its practitioners. The questions arising out of sale of poisons—the feasibility of introducing here the decimal weights into Pharmacy, and lastly the new idea of a universal Pharmacopœia for all civilized nations, are sufficiently interesting to invite reflection by our members and promote a general discussion in the meetings.

ERRATA.—Page 114, vol. xxxix., March, 1867, 13th line, omit the word "drying." Page 116, same volume, first line from bottom, read "Zingiber nigra; second line from bottom, "Zingiber alba." Page 189, fifth line from bottom, read "1865." Page 154, for "Brown's glycerin," read "Bower's glycerin," an error of the press in the *Medical and Surgical Reporter*.

The Commencement of the Philadelphia College of Pharmacy was held in the Academy of Music, March 14th, 1867, on which occasion the degree of Graduate in Pharmacy was conferred upon forty two students of the Class of 1866-67, who had successfully passed the examination, by Dillwyn Parrish, Esq., Vice-President of the Institution. The occasion was the most marked of its kind that has yet occurred as regards the number of graduates, the great concourse of spectators who filled the large hall of the Academy, and the numerous guests and members of the College who occupied the stage. The valedictory address was given by Prof. Robert Bridges, after which Mr. Bertine S. Erwin, on behalf of the Zeta Phi Association of the students, in a short appropriate speech, presented to the

College, on behalf of his association, a portrait of Prof. Bridges, for the College Museum Hall. Prof. Edward Parrish, on behalf of the Board of Trustees, in a few feelingly apposite remarks, acknowledged the gift, and commented on the well-deserved honor which it reflected on the veteran professor of chemistry.

The last feature of the ceremony—one which has grown up of latter years until it is time to curtail its proportions—was the presentation of bouquets of flowers to the graduates. On two side-tables, during the gathering of the audience, the friends of the graduates had piled up their floral contributions until two pyramids of beauty were formed. When the time arrived these were wheeled into the centre of the platform, and Profs. Maisch and Parrish, calling out the names appended to each, distributed them to the lucky recipients. Fortune, as usual, was wayward in her gifts, for while one gentleman was favored with eight bouquets, many received but one and a few were wholly forgotten. All went off favorably and happily, and the occasion will be long remembered.

On the action of Medicines in the System.—By FREDERICK WILLIAM HEADLAND, M. D., Fellow Royal Coll. Phys., etc. Fifth American, from the Fourth London Edition. Philada.: Lindsay & Blackiston, 1867. pp. 431. octavo.

The last American edition of Headland was in 1863, from the third English edition of 1859. The present volume is the fifth American from the fourth English edition, the author's preface of which is dated November, 1866. The author has aimed to improve without enlarging it, and in fact, notwithstanding "a considerable number of fresh observations and discoveries, some of them of considerable importance, and representing the labors of therapeutists of all nations during the last seven years, have been noticed in their proper places in the present volume," yet the actual number of pages is less than in the fourth edition, a fact due to the use of smaller and more compact type. The paper is excellent, the binding good, and the typography unexceptionable. So much for this part of the subject. The general character of the work for accuracy, its high standing among treatises of its kind, and the elegant diction of its accomplished author need no comment; they are well known to our medical readers; but it may be asked of what use is the book to the pharmacist? What does he need that its pages embrace? Why should the book be noticed at all in a pharmaceutical journal? We reply that it is not addressed to the pharmacist, nor is it a *necessary* volume for his shelves; yet the whole subject of Therapeutics, of which this work forms an important part, should certainly interest a class of individuals whose daily engagements as dispensers are actively connected with the agents producing the phenomena of which this volume treats. It is true that very much mystery yet involves "the action of medicines in the system," and much of what our author has to treat is hypothetical, at least not proven; nevertheless, the

vast importance of the results he aims at to rational medicine, and the deep almost romantic interest which gathers around such subjects as opium, bark, nux vomica and calomel, viewed from the stand-point of the practising physician, have sufficient interest to pharmacutists who aim at something beyond the pestle and mortar, to invite their perusal of this admirable volume.

The half yearly Abstract of the Medical Sciences.—Being an analytical and critical digest of the principal British and Continental medical works published in the preceding six months. Vol. xliv. July—December, 1866. Philadelphia: Henry C. Lea, 1867. pp. 299. octavo. From the publisher.

We have only space to say that this volume is rich in valuable articles, among which there are many on *Materia Medica* and *Therapeutics*. Gathered from all sources in the new books and medical journals of Europe and America, this work may be viewed as the cream of that class of medical essays, and is a useful occupant of the physicians office-table to keep him reminded of the progress of medicine.

OBITUARY.

ALEXANDER DALLAS BACHE, formerly of Philadelphia, and for many years the able Superintendent of the Coast Survey, died last month, at Newport, from cerebral disease, induced probably by excessive mental engagements. Prof. Bache graduated at West Point Military Academy in 1825, at the head of his class, and was immediately after promoted to assist the professor of military engineering in that institution. After a short service in the army, he received the appointment of Professor of Natural Philosophy and Chemistry in the collegiate department of the University of Pennsylvania in 1827. If our recollection serves, he was the first principal appointed to the High School of Philadelphia, and left that station, for the presidency of Girard College, in 1836, over which, however, he never presided, as, before its organization, he was appointed to the Coast Survey, on the death of Hassler, in November, 1843. "In conducting this great work," (says Silliman's Journal,) "few men could have carried to it such ample scientific preparation, so much practical wisdom, and such signal, almost unrivalled, administrative talents." He was chosen President of the National Academy of Sciences, established by Act of Congress in 1863, by that body for six years. He was genial, generous and obliging, and leaves a large circle of friends to feel his loss.

JOURNALS, &c., RECEIVED SINCE THE LAST ISSUE.

- The Pharmaceutical Journal and Transactions, London.
The Chemist and Druggist, London.
Chemical News, London.
Vierteljahresschrift für praktische Pharmacie, Munich. By Dr. G. C. Wittstein.
Journal de Pharmacie et de Chimie, Paris.
Journal de Chimie Médicale, de Pharmacie et de Toxicologie, Paris.
Repertoire de Pharmacie, Paris.
Bulletin de la Société de Pharmacie de Bruxelles.
Revista Farmaceutica, Buenos Ayres.
La Emulacion, Habana, Cuba.
The Druggist's Circular and Chemical Gazette, New York.
American Journal of the Medical Sciences, Philadelphia.
Journal of the Franklin Institute, Philadelphia.
Proceedings of the Academy of Natural Sciences of Philadelphia.
Boston Medical and Surgical Journal.
The American Journal of Science and Arts, New Haven, Conn.
The Medical and Surgical Reporter, Philadelphia.
The American Journal of Insanity, Utica, N. Y.
Medical News and Library, Philadelphia.
The Cincinnati Lancet and Observer, edited by Dr. E. B. Stevens.
The Ohio Medical and Surgical Journal.
The Chicago Medical Journal, edited by Samuel Brainard, M. D., and J. Adams Allen, M. D.
The Pacific Medical and Surgical Journal, edited by Henry Gibbons, M. D. San Francisco, Cal.
Buffalo Medical and Surgical Journal, Buffalo. Edited by Dr. I. F. Miner.
The Chicago Medical Examiner, Chicago.
Eclectic Medical Journal. Edited by Dr. J. M. Scudder.
The San Francisco Medical Press, Dr. E. S. Cooper, Editor.
St. Louis Medical and Surgical Journal. Edited by Drs. Linton and White.
Dental Cosmos, Edited by J. H. McQuillan, D. D. S., and George J. Zeigler, M. D.
The Richmond Medical Journal. Edited and published by Drs. Gailard and McChesney. Richmond, Va.
The Journal of Materia Medica. Edited by Dr. Joseph Bates and H. A. Tilden, New Lebanon, N. Y.
New York Medical Journal, Oct., 1866.
United States Medical Journal, Chicago.
The Savannah Journal of Medicine. By MM. Harriss, Read and Thomas.
The Medical Reporter: a semi-monthly Record of Medicine and Surgery. St. Louis.
The Medical Record. New York. Semi-monthly.
The Journal of Applied Chemistry, New Lebanon, New York. Prof. Dussauce, Editor. 1866.
Atlanta Medical and Surgical Journal, Oct., 1866. Atlanta, Ga.
The Detroit Review of Medicine and Pharmacy.
The Nashville Journal of Medicine and Surgery.
The Dental Times: a Quarterly Journal of Dental Science.
The New Orleans Medical Record. Vol. I. Nos. 1, 2, and 3.
Braithwaite's Retrospect of Practical Medicine and Surgery, N. Y.
Southern Medical and Surgical Journal, Augusta, Ga.
New Orleans Medical and Surgical Journal, New Orleans, La., for March. Bi-monthly.
Half-yearly Abstract of the Medical Sciences. Published by Henry C. Lea, Philadelphia.

AMERICAN JOURNAL OF PHARMACY.

THIRD SERIES.

This Journal is devoted to the advancement of Pharmaceutical knowledge, including practical Pharmacy, Materia Medica, and Chemistry, in its general and applied relations, and to the collateral sciences, Botany, Mineralogy, Zoology, &c. Intended for the benefit of the Apothecary, the Druggist, and the Physician, it merits their patronage and support.

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SUBSCRIPTIONS should be paid to CHARLES ELLIS, N. E. corner 7th and Market streets, Philadelphia, Treasurer of the Publishing Committee, and all letters relating to the distribution and financial affairs of the Journal must be sent to the Treasurer, as above.

ADVERTISING SHEET — An advertising sheet will be appended to each number of the Journal, in which advertisements of new preparations and apparatus, business notices, book notices, etc., will be inserted at the rate of \$5.00 per page for one insertion, or \$20.00 per annum for six insertions.

As a prominent object of the establishment of this Journal, was the discouragement of empiricism, advertisements of quack medicines, properly so called, will be excluded. Advertisements to be directed to the Editor as above.

AGENTS.

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JOURNAL OF PHARMACY,

PUBLISHED BY AUTHORITY OF

THE PHILADELPHIA COLLEGE OF PHARMACY.

EDITED BY

WILLIAM PROCTER, JR.

THIRD SERIES.]

JULY, 1867.

[VOL. XV. NO. IV.]

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NOTICE BY THE PUBLISHING COMMITTEE.

The American Journal of Pharmacy has now completed its 38th volume. On an examination of the stock of the Journal, the Committee find that eight of the volumes are wholly or partially out of print—viz., vols. 1, 2, 3 and 5 of the first series, and vol. 1 of the 2d series, and the 4th, 5th and 13th vols. of the 3d series. All the remaining volumes, 29 in number, they can supply on demand. Believing that the work embodies a large amount of information, extremely valuable to Apothecaries, Druggists and Physicians—comprehending, in fact, a faithful record of the development of Pharmaceutical science and inventions during the period of its issue, now about thirty-eight years, both in Europe and America, the Committee consider that no Pharmaceutical library should be without it.

Besides the abstract and applied science embodied in this work, a large number of formulæ are contained in it, including many, which though not official, are more or less valuable and in use.

As an inducement to Subscribers to complete their sets as far as possible, the Committee offer the back volumes to the 24th inclusive, at the reduced price of \$1.50 each, nett.

The volumes 25 to 38 inclusive, except the 28th and 29th volumes, are held at the publishing price, 3.00, unless a full set is taken, in which case they will be supplied at \$2.50 per volume.

The Committee offer the publication price in money for the 4th number of the 1st volume, published January, 1830; for the complete 2d volume, commencing April, 1830; for the complete 3d volume (1831); for the complete 5th volume, 1833, and for the complete 7th volume, commencing April, 1835. They will also be glad to receive and pay for the January and July numbers of 1857, for the March number, 1856, for the 37th volume, (1865,) and for the January number, 1866.

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THE
AMERICAN JOURNAL OF PHARMACY.

JULY, 1867.

PHARMACY OF THE CINCHONAS.

BY EDWARD R. SQUIBB, M. D., of Brooklyn, N. Y.

There are perhaps, few articles of the *Materia Medica* of more importance than the Cinchonas, even when considered apart from their relations to the sulphate of quinia as an antiperiodic. The proper and judicious use of tonics has of late years, been practically recognized to be one of the prominent studies of the physician who is skilful in the practice of his art; and the best and most generally applicable of all tonics are the Cinchonas.

That the artificially prepared salts of quinia are tonic there can be little doubt, though this has been questioned by good authorities, and yet this is not their original, nor their most appropriate use. They should be held and used only as antiperiodics, and as agents for the production of quinism. Many good authorities have taught that the alkaloids and acids of the Cinchonas, in their natural condition and combinations, are best adapted to use as tonics, and the writer desires to add his testimony to that of such authorities, and to go still further, believing that these natural combinations *alone* are well adapted to use as tonics; and that sulphate of quinia is as inferior to them as tonics, as it is superior as an antiperiodic. The main advantage gained by the extraction of quinia and its recombination with

other acids, is to facilitate its easy and definite administration in large doses without embarrassing the stomach with the greater volume of the bark or its preparations, and as these large and accurately adjusted doses are only required as antiperiodics,—or at least only outside of and beyond the sphere of tonics proper,—the ordinary salts of quinia should be reserved for such uses, and be replaced to a large extent by preparations of the bark. It is not uncommon to hear of eminent pathologists and eminent diagnosticians, but far less common to hear of eminent therapists, yet the latter class can alone be successful practitioners of medicine, whilst of these some of the most successful, both of the past and present, are found using their natural remedies in their simplest form, and reasonably, if not wisely doubting whether convenience of administration be not often attained at the cost of medicinal efficacy and certainty. Without being justly charged with going back in pharmacy,—and even while urging its more rapid progress,—it may be doubted whether any more effective or more certain preparations of the Cinchonas than the simple infusions of the Pharmacopœia can ever be used, provided the quality of the bark can be assured. These are by no means inelegant preparations, may be easily aromatized at pleasure, and can only be discredited by a squeamishness on the part of patients which is too much encouraged by the money-making devices of the pharmacist.

There is another important reason why physicians are not justified in the use of quinia salts as ordinary tonics. It is well known that the Cinchona forests which yield the best varieties are becoming rapidly exhausted through the large demands upon them, and the wasteful methods of collecting the barks, and year after year the richer and more valuable Cinchonas are becoming dearer and more difficult to obtain. This has made it necessary for quinia manufacturers to give up the use, in a great measure, of these more valuable species, and substitute the cheaper kinds, which yield a smaller proportion of the alkaloid. Now, although quinia is the chief if not the only antiperiodic ingredient in the Cinchonas, it has never been reasonably doubted that the other alkaloids, the acids, and the astringents of the barks are important and valuable tonics, if not equal to quinia in this respect.

Then, as in the extraction of quinia all these other derivatives are in great measure sacrificed and wasted, it is not difficult to see that the use of artificially prepared quinia salts involves, beside the expense and profits of extraction, an absolute waste of the other useful constituents of the Cinchonas at a time when the source of supply is becoming precarious and in danger of exhaustion. If physicians would limit the use of quinia to its legitimate sphere, and apply Cinchonas to their much more extended legitimate sphere, there would be an important economy in results, in cost, and in the future prospects of this important drug. There are but two very good arguments against a very large reduction in the use of sulphate of quinia as a tonic. The most important of these is that Cinchona barks of similar appearance are very variable in quality and often worthless, while the tests of value have not been considered of easy application. The other is the smallness of compass, and greater convenience of administration in the use of sulphate of quinia. To these, and to fashion, which is cultivated by chemists as well as by milliners, is the use of sulphate of quinia as a simple tonic, mainly attributable. It may be easy to rail at fashions in medicine, but when based upon avarice and want of knowledge they are about as little likely to yield as fashions in dress which are based upon frivolity and ostentation.

In these days of medicine-made-easy it would be very difficult to convince many patients, or their pliant medical attendants either, that a bitter dose of any preparation of Cinchona was better than a sugar-coated quinia pill, and therefore, except by setting acknowledged and established truths in front of bad practices, the writer does not propose to attack these evils here.

The first and most important argument against the use of Cinchonas as tonics, namely, the variable quality of the barks as met with in the markets, is however entirely within the domain of practical pharmacy, and it is a prominent object of this paper to suggest a means by which the force of this argument may be diminished.

The varieties of Cinchonas to be considered here are those technically known as "Red" and "Yellow," and it is well known that both these can be purchased in the common market at

prices varying from 40 cents to \$2.50 per pound, while other qualities, said to be met with in European markets at about three and four dollars per pound, are not seen here at all, though we are so much nearer to the source of supply. The appearance of all these grades, especially when in the common condition of a well made powder, is so much alike, and so liable to be deceptive, that the observations and experience of many years directed to them with much interest and attention, has taught the writer that he knows nothing about Cinchona barks by the appearance, and that for him at least, there is no safety short of the actual separation and weighing of the impure alkaloids which a well-selected sample may contain. The published processes of assay are numerous, and not very troublesome or difficult, and are scattered throughout the literature of chemistry and pharmacy for many years past. Most of these processes are reliable enough, and practically it is a matter of indifference which of those that are best known is adopted, provided it be afterward adhered to, in order to realize or utilize the education to it which can only be obtained by repetition. An imperfect process, well practised, is often better than any change, and as the same process, if systematically followed, always involves about the same errors and losses, its results, when compared among themselves, must always be more reliable than where different processes are adopted at different times. The process adopted by the writer, and now a good deal used, is that of Dr. F. L. Winckler, published in the Year-book of Practical Pharmacy for 1852, and republished in the "Amer. Journ. of Pharmacy" for 1853, page 339, and abridged in the U. S. Dispensatory, 12th edition, page 295. It is plain, simple, consistent and easy of application, and sufficiently accurate for practical purposes, when well learned, even in hands so moderately skilled as those of the writer. But all these processes aim at an accuracy and precision but little adapted to ordinary pharmacy, and not at all necessary in valuing Cinchonas within the limits of great practical utility. Beside this they involve apparatus, dexterity, and often chemicals, as well as knowledge not usually possessed by the practical pharmacist, and for these, among other reasons, have been but little used where most needed, namely, in the drug market. A consider-

able experience with Winckler's process, and a number of experiments made for the purpose, have led the writer to slight modifications in the detail and practice of it, which, without much injury to its great utility, place it within the sphere of application in every pharmaceutical establishment. By this adaptation its accuracy is impaired, of course, and the first few trials with it are not reliable without confirmation; but after a very little practice it becomes familiar and easy, and the results uniform, while it costs very little in either money, labor or skill. The most that it does require is time and patience; and these, which we so unwillingly give to anything in these days, are absolutely indispensable here, and if these be not accessible the assays had better not be attempted in this way, for they cannot be honestly made.

The apparatus necessary for the convenient performance of the process is a scale that will turn with half a grain, or even a grain, and a set of weights that agree pretty well among themselves; a graduated measure, divided down to a fluidrachm; two capsules or evaporating dishes, having the capacities of about a pint and four fluidounces; a 5-inch funnel; two pint flasks, fitted with corks, and one of them marked at about 12 fluidounces by a scratch or by pasting on a piece of paper; and two or three little beakers of say four fluidounces capacity, with stirrers. The materials necessary are about $1\frac{1}{2}$ pints of common alcohol; 250 grains each of powdered animal charcoal or bone black, and fresh-slaked lime; half a fluidounce of diluted sulphuric acid, one part acid to nine parts of water by measure; a half a fluidounce of aqua ammonia, diluted with an ounce and a half of water; and three or four each of five-inch and three-inch round filters of common gray paper. No item of this apparatus or material is required of any special accuracy or purity, and every one of them may be found in any ordinary pharmacy or dispensary, of proper sizes and qualities, near to those as mentioned. A small spatula or two, some paper and some water, complete this simple list of all that is necessary except a water bath, which may be easily extemporized from any common source of heat. The Cinchona must always be in powder, and the finer the better, the ordinary powders of the market being just right. Pieces of bark

should not be picked out, or even taken at random, for this assay, since it is so difficult if not impossible to get a fair average of a larger lot in that way. But rather the quantity required for the stock of the pharmacist should be bought subject to approval, or subject to a verification of the statements made as to quality by the seller of it, and then if unpowdered the whole should be powdered and sifted together, and a portion of the well mixed powder be then taken for the assay. One thousand grains of the powder is weighed upon a counterbalanced paper, and poured into the largest dish, and enough alcohol stirred into it to wet it thoroughly and uniformly into a smooth even magma of almost a semifluid consistence. It should hardly be thin enough to pour, but just thick enough to be transferred with the end of a spatula, without running off or dripping. If the powder be very fine and dense $2\frac{1}{2}$ fluidounces of alcohol will be sufficient. If a little coarser, or lighter, as is commonly the case with true good Calisaya, 3 fluidounces will be required. Then place the funnel in the marked flask, and fold two three-inch round filters into quarters, in the usual way, by twice doubling down the sheet. When a filter, so folded in the common way, is placed in a funnel for the reception of the substance, there are three thicknesses of the paper against one side of the funnel, and but a single thickness against the other, and then as the porous paper is the only channel through which the liquid can reach the receptacle below, it follows that the three thicknesses of paper will filter much more rapidly, or, under some other circumstances, much less rapidly, than the one thickness. Such inequality in the two sides is not well adapted to percolation; nor should a ribbed funnel ever be used for percolation, nor a smooth one for simple filtration, if it can be avoided. To compensate this inequality of sides in this process, let the one little folded filter be placed inside of the other, with the three-thickness side of one applied to the single-thickness side of the other, and when they are then placed in the funnel there will be four thicknesses of paper applied to the funnel all round, thus giving a uniform direction to the passage of liquid under a uniform pressure from within. Such details are often of more importance than they appear to be, and are easily learned. When the little filters are thus pro-

perly adjusted, transfer the bark magma to the funnel with the end of a spatula, depositing the first portions very carefully within the little filters, so that these may be pressed uniformly out against the glass. Each successive portion should be placed in the centre, so as to maintain a conical pile of the magma, which tends to press equably downward and outward. When the funnel is filled above the edge of the filters less care is necessary, and the remainder may be transferred more rapidly. When the entire contents of the basin are thus collected in the funnel a little tapping on the surface with the spatula serves to level it down, and the funnel, when of the size indicated, is found about half full. The portions adhering to the spatula having been brushed off into the funnel, a four-inch round filter is cut in toward its centre for about a quarter of an inch, at intervals of a quarter of an inch or so, all round the edge, by means of a scissors, and then laid with some care upon the magma, and gently pressed into accurate contact over the whole surface. The cutting round the edge enables the edge to apply itself smoothly to the funnel above the surface of the magma, and a shallow porous cup is thus formed for the reception and equable distribution of the menstruum. The funnel is then filled half way up to the edge with alcohol, and covered with a round filter or piece of flat paper, a little larger than the funnel, and is set away out of reach of accident. The dropping commences at once, at a rate at first proportionate to the quantity of alcohol used in wetting the powder, but if properly arranged as described, it soon settles down to a rate of from 4 to 6 drops per minute, and thus continues to the end. The slower the percolation the better will be the exhaustion by any given measure of menstruum; and as the exhaustion of the bark is the prime object and the most difficult part of the whole process, a slow percolation must be attained in order for any practical degree of success. Under the prescribed management this part of the process will take care of itself, and ensure its own success; for it will be found impossible to hasten it if the powder be fine, and therefore all that is necessary for the operator is to replenish the menstruum in the funnel once or twice in each 24 hours, and patiently wait for the proper result. Even this attention to re-

plenish the supply of menstruum may be conveniently saved by placing 8 or 10 fluidounces of the alcohol in a vial and fitting the vial with a cork perforated with a glass tube two or three inches long and not less than a quarter of an inch in diameter, and broken off obliquely or raggedly at the outer end. This vial and tube held inverted over the funnel, in any convenient way, with the end of the tube about a quarter of an inch above the paper, will supply the little percolator so long as it contains any alcohol, and may be relied upon to keep the surface always covered with a stratum of the menstruum, a matter of some importance to the successful exhaustion. This percolation takes the place of the repeated boilings and strainings of Winckler's process, and is much less troublesome, involves less loss, and requires far less skill and dexterity, while it is quite as effectual and requires less menstruum but far more time and patience. Two entire days is generally necessary to obtain the 12 fluidounces of percolate, which secures the practical exhaustion of the bark. If this quantity should be obtained in less than 24 hours the exhaustion is scarcely to be relied upon, and the results will proportionately undervalue the bark. If the percolation be continued farther than the prescribed quantity the percolate in the case of Red Cinchona will be as dark as new port wine, and from Yellow Cinchona as dark as dark brandy, and both will be very bitter, yet if subjected to a careful accurate process, they yield a proportion of alkaloids which increases the results but one or two tenths of a per cent., an accuracy not aimed at, and hardly useful in such a process as this. When the 12 fluidounces shall have been received within not less than 24 hours' time, let the funnel be removed and the exhausted bark be thrown away. Then add to the 12 fluidounces of percolate in the flask 2 fluidounces of water, and shake the contents together. The powdered Cinchona is more easily percolated and better exhausted by alcohol (s. g. .835), but the reactions of the next step of the process occur more quickly and more certainly and more accurately when the alcoholic percolate is a little diluted: hence this addition of water before the animal charcoal and lime. If it be Red Cinchona that is under examination, add to the percolate in the flask 250 grains each of powdered bone black (crude) and slaked

lime, previously rubbed together in a mortar; fit the cork into its place, and shake the mixture well. If it be Yellow Cinchona, somewhat less of this mixture will be required, but as a surplus is not hurtful the quantity may be the same for either. Common sugar-refiners' bone black in powder answers a good purpose, and the fresher it is the better. The lime should be recently slaked and well hydrated. Eight parts clean lump lime and five parts water are good proportions for slaking, and give a damp powder. This mixture of bone black and lime may be introduced into the flask when the percolation is about half accomplished, if it can be done with such dexterity as to avoid loss or risk. This saves some time, but had better not be undertaken by the inexpert. If so introduced, it should be shaken round with the percolate so as not to fall to the bottom and lie there in a mass to become hard and unmanageable. The mixture in the flask is to be well and frequently shaken during one or two days, and the oftener the better until on settling the clear liquid above appears to be of a sherry wine color. For the first 12 or 24 hours the mixture remains thick and muddy looking; after that the sediment settles out between the shakings and the upper stratum is seen to become less colored the longer it is shaken together, but the writer has never seen it become perfectly decolorized as described by Winckler. When of a sherry wine color that is quite sufficient for all practical purposes. A five-inch filter is then folded, wetted with alcohol and placed in the funnel, and the funnel placed in the other of the two flasks. The upper clear portion of the mixture is then first passed through this filter, and then the sediment is poured upon it, taking care never to fill the filter more than about two-thirds full until the last portion is poured in, and then not above three-fourths. When the clear liquid shall have pretty well drained off from the sediment, pour on to this latter about 1 fluidounce of alcohol, to displace the liquid still held. Then with the point of a small spatula remove as much of the sediment from the filter as is easily practicable without breaking or injuring the filter, and return it to the flask whence it came. Then add to it 2 fluidounces of alcohol, shake it vigorously for some minutes, and return it to the filter in the funnel with the same precautions as

before. When again drained pour upon it 2 fluidounces of alcohol, half a fluidounce at a time, and then wait until it has ceased to drop into the flask.

The whole of the alkaloids of the Cinchona, within practically useful limits, are now in solution in this alcohol, and the alcohol, having performed its office, is now in the way. It may be evaporated off in the basin in a water bath, or it may be recovered and saved for future use by adapting a perforated cork and tube to the flask, and connecting the tube by India-rubber tubing with any regular or extemporized condensing apparatus, and then immersing the flask in the water bath. By far the most simple way for inexperienced persons, or those whose attention has to be divided by other occupations, is to waste the alcohol by evaporation in the basin by a water bath, avoiding any violent boiling by which portions of the liquid may be thrown out and lost. When evaporated down to about 1 fluidounce, or until the odor of alcohol is no longer discernable, and the water of the bath boiling, add first 2 fluidounces of water and then half a fluidounce of a previously made mixture of half a fluidrachm of sulphuric acid with half a fluidounce of water. Before this addition the basin will contain a milky liquid, with separated resinous-looking particles floating around or adherent to the basin around the edges of the milky liquid, of a soft consistence while the liquid is hot, but becoming first tough and then resinous if the liquid be allowed to cool. This is a mixture of the fused alkaloids with fatty matter, etc. When the diluted acid is added the liquid at once becomes clear and transparent, of a pale sherry color, and fluorescent. The whole must now be heated and stirred with a glass rod until the resinous masses are thoroughly dissolved or disintegrated and nothing but insoluble residue, mostly flocculent, is to be seen, and this floating lightly through the liquid or adherent as greasy matter to the basin. The basin is then removed from the bath or lamp and allowed to become perfectly cold, in order to facilitate the separation of the fatty matter, etc. A four-inch round filter is then moistened with water and adjusted in the funnel, and the solution of the sulphate of the mixed alkaloids is filtered through into a 4 or 6 fluidounce beaker. When all the solution has

passed, the basin is to be rinsed twice, each time with water enough to fill up the filter, the first being allowed to run through before the second is poured into the filter. Next, let a mixture of half a fluidounce of aqua ammonia with one and a half fluidounces of water be made, and add of this mixture gradually, little by little, and with constant stirring, to the filtered solution in the beaker. At first the curdy precipitate formed will be redissolved almost as fast as formed, showing an excess of acid, and when the precipitate becomes permanent the diluted ammonia should be added more slowly and more cautiously and at longer intervals, until the contents of the beaker, after thorough stirring and with the vessel containing the ammonia setting far off, smell very faintly of ammonia. The precipitate may now be allowed to settle until a stratum of clear liquid is formed on the top, and a drop or two of the diluted ammonia be dropped into it. This will show that the precipitation is complete or otherwise; and if complete the next step of the process may be undertaken. It is better, however, to cover the beaker and let it stand for a few hours, or over night, to secure a more thorough precipitation of the minute portions of solution that are caught and enveloped in the curdy precipitate, and which are gradually squeezed out by a contraction of the precipitate. A 5-inch round filter is to be carefully weighed, and the weight marked upon it with a pencil, wetted and adjusted in the funnel, and the solution and floating precipitate gradually poured into it, until all the precipitate is on the filter, and most of the solution drained through. Rinse the beaker with water, scratching off all the precipitate from the sides as clean as is easily practicable, and pour the rinsings upon the precipitate in the filter. Repeat this a second time and then allow the precipitate to drain and contract if it will. Then carefully remove the filter and contents from the funnel, and spread the filter out by unfolding it upon a folded newspaper or other bibulous paper. When the filter is unfolded by commencing with the empty folds, the precipitate will retain the conical form of the funnel. Let this be carefully broken up into small fragments, without loss, and spread over the open filter. The several folds of bibulous paper beneath the filter soon absorb a large portion of the liquid from the precipi-

tate, and this may then be broken up still finer. It is then dried perfectly, first by exposure for 12 hours at ordinary temperatures, and then by placing the whole, bibulous paper and all, in some warm place, with free circulation of air, but protected from dust and accidental loss, for 12 hours more. If the temperature be too high the alkaloids will melt and contract, and adhere to the paper, but this does not affect the result if they have been so spread over the filter as to prevent the formation of masses which might retain moisture within them. At the end of the 24 hours' drying take up two sides of the filter so that the precipitate may fall toward the centre, if it moves on the paper, and place the filter and contents on the scale. Weigh the whole carefully, and subtract the weight of the filter. The remainder is of course the weight of the impure mixed alkaloids from the 1000 grains of powdered Cinchona. If the Cinchona be of good quality this quantity should yield from 28 to 30 grains. If of very good quality from 31 to 34 or 35 grains, and this weight is converted into per centage by simply placing a decimal point immediately to the right of the first or left hand figure. Thus, if 1000 grains of Cinchona yield 31 grains of impure mixed alkaloids, this is equal to 3.1 per cent. If it yield 31.6 grains this is equal to 3.16 per cent. in the Cinchona, and the results may then be applied to any larger quantity by simple arithmetic. These mixed alkaloids are commonly of a dark cream color when dry, unless contraction or fusion has occurred, when they are still darker, and they are quite impure, so that the valuation obtained by weighing them is too high by say about 10 per cent. of their weight. For example, a Cinchona which yields 34 grains, or 3.4 per cent. of its weight of these impure mixed alkaloids, does not yield more than 3.4 less 0.34 equal 3.06 per cent. of pure mixed alkaloids. This, of course, is only a rough practical estimation, but still very useful, until we all learn to be more skilful and accurate. In order to show the want of anything like absolute accuracy in this process it is only necessary to add a few drops of the diluted ammonia to the clear liquor filtered off from the precipitate. In nine cases out of ten this will cause a very decided milkiness and precipitation, indicating the presence of alkaloids. This is in consequence of the small

quantities of the original solution caught and enveloped by the curdy precipitate, and thus protected from the action of the ammonia until it is squeezed out by contraction of the precipitate. The quantity which escapes the weighing in this way is, however, very small, and may be safely disregarded rather than complicate a process which if useful at all can only be so by its general applicability.

The above details may appear ostentatious and prolix on the one hand, or triflingly minute and unnecessary on the other; but in the experience and judgment of the writer they are quite as indispensable to success as the principles involved in the chemistry of the process; and as they are known, by much experience, to be very useful in practice, and earnestly believed to be very much needed to control the markets in the interest of medical science and art, it has been attempted to give them in such detail that any person of ordinary intelligence can take the description and step by step apply the simple process. If pharmacists would but educate themselves to the application of such tests in the same proportion as they do to become good salesmen, they would elevate their profession above the rank of common trade, and be themselves elevated in knowledge and truth and all the influence that flows therefrom.

It is a very great satisfaction to be assured of the quality of a lot of Cinchona by an actual examination, since all the preparations into which it afterwards enters must partake of its assured quality, and fortunately thus far there is no difficulty in obtaining either Red or Calisaya barks of fair quality, if the proper sources be applied to, the proper prices be paid, and the proper tests be applied. It may not always be easy to get Cinchonas yielding 3 per cent., for such are comparatively rare and require much care and discrimination to keep up a stock. But those containing 2 per cent. are always easily accessible in all the principal markets, and the Pharmacopœia, with characteristic liberality and concession toward trade, prescribes 2 per cent. as the lowest grade admissible for officinal yellow and red Cinchonas. It was a good step in the proper direction to establish a standard, but the condition of the markets and the unsatisfactory results obtained from preparations of Cinchona by physicians leads to the inference that the standard is not generally applied.

Of course the first requisite to any preparation of Cinchona is that it be made from good bark, and therefore some reliable process of testing must belong to and preside over all the successful pharmacy, as well as the successful administration of the drug in its various forms. In considering its pharmaceutical management, therefore, good Cinchonas, known to be not below the low officinal limit, should always be understood.

The officinal preparations of Cinchona are all well known, and of undoubted efficacy when made from standard materials, and yet it can hardly be doubted that some of the more recent ones may be usefully improved, if not others usefully added. The officinal fluid extract is a thick, muddy-looking, unsightly, inconvenient preparation, almost unmanageable in making and dispensing, when accurately made from good Cinchona, and it is mainly with the object of improving this preparation that this paper has been undertaken. Three prominent points in its formula are considered of doubtful utility, if not objectionable, and it has been thought well worth while to investigate the subject. The first point of objection is to the use of Diluted Alcohol as a menstruum, and the excessive quantity of menstruum used. The second point is the use of sugar as a preservative; and the third, which flows as a necessity from the first two, is the making a minim of the finished product represent half a grain rather than a grain of the Cinchona used.

Why Diluted Alcohol is universally used in all the preparations of Cinchona (except the extract, wherein alcohol is followed with water) does not appear in the writer's research into the chemistry and pharmacy of the subject. It undoubtedly exhausts the Cinchona with ease and celerity, the menstruum soon coming through with comparatively little color and bitterness, and this circumstance seems to have been universally accepted as evidence that it is the proper menstruum. Authorities seem to have followed each other in adopting it with such unanimity that to propose a change at this late day in the management of a drug so well known and studied involves a responsibility not to be lightly assumed. This point has therefore been made the subject of careful observation and experiment.

The use of sugar as a preservative agent to the medicinal properties of Cinchona is modern, and became official in the present fluid extract. Though it does not hold all the matter extracted by Diluted Alcohol in a perfect solution, yet it suspends and preserves them well, and replaces a portion of the alcohol which would be required without it. It has been supposed that the stimulant effects of alcohol were objectionable in this preparation, and this appears to have been the main reason for using sugar. Nothing, however, is now more common, or apparently more useful, in the use of bitter tonics, and particularly with preparations of Cinchona, than their judicious association with stimulants, and hence this argument for the use of sugar will no longer be generally accepted, whilst its addition to the official fluid extract is the chief reason why the preparation cannot be made to conform to the general rule of strength for the fluid extracts, namely, a minim for each grain of the drug represented. This exception to the rule in the case of Cinchona, where the dose in substance is so large, and has to be doubled when the fluid extract is used, is a serious objection to the formula, and quite at variance with the general argument in favor of fluid extracts. If, then, by changing the menstruum and the preservative agent the consistence, permanence, appearance and effect can be improved, and the volume reduced one-half, and brought to conform to the general rule, such change would doubtless be judicious and generally acceptable.

In a report to the Amer. Pharm. Assoc., by Mr. Alfred B. Taylor, of Philada. (see Proceed. Amer. Pharm. Assoc. 1864, p. 206), Mr. Taylor, who had originated the improved formula for the use of sugar, following Mr. Donovan, of Dublin, and others, made another important step in the progress of improvement by substituting glycerin for both sugar and water, with the result of making an elegant, permanent and efficient preparation, which left little to be desired except a reduction of volume to one-half. This reduction, if made upon Mr. Taylor's fluid extract, would subject it to much additional heating, and yield a product of unmanageable consistence.

(To be continued.)

CARELESSNESS IN THE COLLECTION OF DRUGS.

BY J. M. MAISCH.

Careful pharmacists will always subject new lots of drugs to the process of garbling. When large quantities of different drugs are dried at the same time in the drying closet or room, or when original packages are kept open side by side in the warehouse of the wholesale dealer, the drugs may become mixed to a slight extent. These chances alone, aside from all possibilities of intentional admixtures, render it incumbent upon the pharmacist to subject each parcel to a rigid examination, and separate all foreign admixtures, as well as all unofficial parts of official plants.

Of late years, the quality of certain drugs has constantly assumed a lower grade. Alexandria senna, which was always more or less mixed with petioles and with leaves which, to a casual observer, might pass for senna, has gradually become adulterated with stalks to such an extent that, by garbling, fully 50 per cent. may be separated, thus enhancing the price of a passable drug to double the amount of the commercial article. While it is possible that some careless or unscrupulous persons may use these impure leaves, the majority of pharmacists probably employ the East Indian or Tinevelly senna, unless the Alexandria variety is particularly ordered.

This is only one instance; but every pharmacist will remember many others. If, in the inspection of the imported drugs at the ports of importation, the United States Pharmacopœia is taken as the guide, it is to be wondered where the drug inspectors find the authority for passing senna leaves containing half of their weight of leaf stalks and branches, or how they can allow genuine Russian rhubarb manufactured in western Europe to enter our ports, after the true drug has been used up for years.

To a considerable extent, these evils arise from the fact that importers will limit the price of drugs when ordering them by letter from foreign countries, and dispensing pharmacists will continue to buy cheap drugs. It is for this reason that in foreign drug markets drugs are frequently considered good enough for the American market, when no apothecary would dare to keep

them in his store, and no wholesale dealer would have the hardihood to offer them to a respectable pharmacist. Valerian with more than its own weight of dirt enclosed between the fibrous roots, belladonna mouldy and black by careless drying and packing, narcotic extracts containing all the chlorophyl and all mucilaginous constituents of the plants, are thus thrown upon us, notwithstanding it is well known that by paying a fair price a fair article may be obtained in these same markets.

Most inferior crude drugs are undoubtedly in such a condition from the utter carelessness in their collection, and this is induced by the low price paid for them; but the inferior preparations are and must be produced designedly, and the fact of a too low price being obtainable only, is no excuse for a conscientious manufacturer. Still, with the drug law faithfully carried out, such worse than worthless trash could not enter from abroad.

It is, however, easy enough to preach against the unreliability and the impurities of some foreign drugs; are we not, to a certain extent at least, drifting in the same direction with our indigeneous drugs?

Without intending to intimate that it is the rule, I may state that I have found *Veratrum viride* with almost 12 per cent. of worthless stalks attached (see *Am. Journ. Ph.*, 1864, 99); the roots are always attached to it, although they are at least inferior to the corm, if not actually worthless. *Seneka*, and particularly *spigelia*, may be seen with several inches of the over-ground stem attached to it; elder flowers consist in the smallest proportion of the flowers,—the cymes are collected with as much of the peduncles as possible; in the same manner, instead of the fruit alone, the commercial so-called (wild) carrot seeds consist of the entire umbels.

And where the leaves are officinal or the herb is ordered, it is usual to collect the *whole* herb, cut off near the ground, without regard to the inefficiency of the older portions of the stems. When the pharmacopœia orders the leaves of *Salvia officinalis*, it did not intend to have from 12 to 25 per cent. of stems mixed with them. Although directing the herb of *Mentha piperita* and other plants (the leaves and flowers are the true aromatic portions), the stout, tasteless stem was certainly not designed; the

herb of *Lobelia inflata* does not include the root; and when *Epigæa repens* is wanted, notwithstanding it is not officinal, the astringent leaves only are intended, and not likewise the creeping woody stems, which are destitute of astringency.

Nor is this all; occasionally plants or parts of plants are brought into the market under entirely wrong names. Most readers are undoubtedly familiar with the interesting discussion on saffron at the meeting of the American Pharmaceutical Association in Boston, in 1865, when safflower (*carthamus*) was exhibited under the name of saffron. I have lately repeatedly seen what was announced as marigold, *Calendula officinalis*, and proved to be *Tagetes erecta*, the so-called African marigold. The florets of *calendula* are used chiefly on account of their bright yellow color, and it is not improbable but the florets of *Tagetes* may be used for the same purpose; but then they alone ought to be collected, without the involucre, receptacle and fruit, and, more than that, they ought to be sold under their proper name.

Our indigenous *materia medica* is undoubtedly scarcely explored; there may be many plants which are hardly known as remedial agents, and the future will necessarily bring to light many which as yet have attracted no attention. To create and keep up confidence in these drugs, it is indispensably necessary that sufficient care should be bestowed upon their collection and preparation for the market. To point out some of the faults in the drug gathering of our country, with the view of correcting the same, has been the object of this paper; and the writer feels assured that every conscientious pharmacist will agree with him that, even at the risk of increasing their price, it is far better that they should be collected and prepared correctly at once, than that he should devote so much of his valuable time to garbling them so as to fit them for their medicinal uses.

FERRATED ELIXIR OF GENTIAN.

BY WILLIAM B. THOMPSON.

A new tonic, under the above title, is being considerably prescribed at present. It is claimed that more decided effect is de-

rived from this combination than by the employment singly of its components. In the absence of any official or general recipe, I have devised the following, which has met with approval. Take of

Fluid Extract of Gentian,	2 fluidounces.
Curagoa,	6 “
Boiling Water,	2 “
Sherry Wine,	Sufficient quantity.
Pyrophosphate of Iron,	256 grains.

The iron salt is to be dissolved in the boiling water, to which solution add the fluid extract of gentian and curagoa, and finally sufficient sherry wine to make the whole measure one pint. The result is a bright, clear solution, decidedly bitter, yet palatable and agreeable, containing in each fluidrachm the proper dose—two grains of pyrophosphate of iron.

Gentian, from the fact that it does not contain tannin, is an eligible bitter for combination with iron; and the idea here suggests itself whether such a preparation is not after all more satisfactory as a tonic than those uncertain compounds of iron and cinchona barks vended under the names of “Bitter Wines,” “Elixirs,” and “Ferrated Elixirs,” which are for the most part only flavored *inks*.

Philada., May 12, 1867.

NOTES ON SPANISH SAFFRON (*CROCUS SATIVUS*).

By HENRY BIROTH.

Read before the Chicago College of Pharmacy April 17, 1867.

From some remarks on Saffron at one of our meetings I have been induced to test its value in regard to purity. I had three samples to dispose of—one from a New York importing house, the others from two Chicago wholesale houses. I was astonished to find them all extensively adulterated.

In 100 parts of sample No. 1 found only 55 parts genuine Saffron,
 in “ No. 2 “ 37 “
 in “ No. 3 “ 42 “

The rest were all colored flowers, mostly of *Calendula officinalis*. It is no wonder that saffron is adulterated; it shares the fate of

most of our costly imported drugs, such as opium, musk, the essential oils, &c. No doubt that there is good saffron in the market, but it is very scarce. The test is very simple and interesting. Put a few pieces of it on a glass-plate, and touch them with concentrated sulphuric acid; the real stigmas assume a beautiful indigo-blue color, while the adulterations remain unchanged. Having experimented in this manner for a little while, you will get so well acquainted with the genuine saffron that you can readily separate it from the adulterations with the pincers.

In speaking of the *Tinctura aloes et myrrhæ* the U. S. Dispensatory says: "The saffron, which has been retained in compliance with former prejudices, can add little to the efficacy of the preparation, and being very expensive has with great propriety been much reduced in the U. S. formula." Under the head of saffron it again says: "At present the chief use of the saffron is to impart flavor and color to officinal tinctures." This is decisive to us. Now let me ask you why the Pharmacopœia wishes to impose upon us a drug so costly and so much adulterated, merely for the purpose of flavoring and coloring three or four tinctures? Do these tinctures need a *coloring* substance, being too light without it? or is it necessary that they should be *flavored*? No; they are sufficiently *colored* and sufficiently *aromatic* without saffron. We must seek for another cause. Saffron had been extensively used in olden times, and especially by the alchemists, who attributed properties to it which were nearer to superstition than to reality. The passion for gold, the mania for search for the philosopher's stone, the alkahest and the great elixir, or the red tincture, induced them to try almost everything. No wonder that saffron, whose tincture shows such a beautiful golden-yellow color, had to play its part in that drama of the development of alchemy. Some of these old preparations which contained saffron are in use still in our Pharmacopœias, though greatly changed, of course. The first and most prominent of these is the great pharmaceutical and medical monstrum *Theriaca*, now *Confectio opii*, that will soon celebrate its 2000th birthday, Mithridate of Pontus, 88 B. C., being its inventor; it originally consisted of over a hundred different drugs, was always prepared in the City Hall, with imposing ceremonies, under the protection of the municipal authorities, and was regarded as

a panacea for all diseases, internally and externally. Then the *Elixirium sacrum*, now *Tinctura rhei et aloes*; the *Hiera Picra*; the *Elixirium Paregoricum* of Am. Disp., 1820; the *Linimentum saponis camphoratum*, according to Gray's Supplement of London Pharmacop.; the *Laudanum*, of London Pharm., 1720; *Sydenham's Tincture of Opium*, genuine formula; the *Vinum Rhei*, according to Gray's Suppl.; the *Tinctura Rhei*, of London Pharm., 1788. All these preparations originally contained saffron, which in course of time was left out, as the formulæ were changed more and more. Others retained the saffron, as our *Tinctura Aloes et Myrrhæ*, or the old *Elixirium proprietatis Paracelsi*; *Pilulæ Aloes et Myrrhæ*, or Rufus' Pills; *Tinctura cinchonæ co.*, or Huxham's Elixir; *Acetum Opii*, or Quakers' Black Drops. But even with these it is only a matter of time. Such therapeutists as Alexander, Orfila and Murray have proved by experiments that Crocus has but little activity, and the U. S. Dispensatory itself does not consider it a medicinal agent in its preparations. To-day it is but a mistaken reverence for ancient formulæ, a fear of lifting the veil of mysticism. I do not mean to say that we shall not respect the Pharmacopœia, or that we shall do as we please, or as we individually think more proper; on the contrary, the Pharmacopœia shall and must be our rule, our guide in pharmaceutical business, and we must adhere to it in our preparations until a change is made. And here allow me to testify my high appreciation of the principles inculcated in the excellent essay of Mr. Mill, our Secretary, published in the Proceed. Am. Ph. Ass. 1865, in which he recommends the utmost *fidelity* to our national Pharmacopœia. It is an essay full of ideas which every young pharmacist in particular should observe and study. But, on the other hand, the right of criticism, this solemn right must not be denied to us, especially in regard to the Pharmacopœia. Each member should feel himself obliged to speak frankly about everything concerning the pharmaceutical business. *Disputando discitur.*

NOTE ON CHEAP GLYCERIN.

BY J. M. MAISCH.

After my paper "on tests for the purity of glycerin" had appeared in the March number, several friends called my atten-

tion to different kinds of cheap glycerin in our market, of which heretofore I had no knowledge,—namely, to an article sold by wholesale dealers under the name of “concentrated glycerin,” and which I am informed is manufactured in this city; to an article said to be made by Merck, of Darmstadt; and to an article of English origin, manufacturer’s name not given. Of the former two I received specimens; the last I have never seen, but, if my information is correct, it is not better than the former, while it is held at a higher price than the “concentrated.”

The two specimens were tested in a similar manner, as described in my former paper, and were found unadulterated.

Litmus, alcohol, ferrocyanide of potassium, acetate of lead and chloride of calcium had no effect; sulphuric acid yielded a clear mixture, gradually assuming a yellowish tint; oxalate of soda rendered them slightly turbid; nitrate of baryta produced a turbidity with Merck’s, none with the “concentrated;” nitrate of silver produced a milkiess in the former, a slight turbidity in the latter; on heating to the boiling point they both turned brown. The specific gravity of Merck’s was 1.247; of the concentrated, 1.251.

The Vienna glycerin had been kept alongside of these specimens for about three months; it has acquired a decided rancid odor. A specimen which had been kept by a friend, part of the time exposed to the sun, had a much stronger odor. Merck’s had acquired a similar odor, though not quite as strong. The “concentrated” has a peculiar, slight, not a rancid odor, which during that time has not increased, but rather seems fainter.

I do not regard these pure enough for internal use; they may answer for some external preparations, however, where low price is a consideration. On that account, and for the absence of the *rancid* odor, I think the concentrated to be preferable, which is likewise less contaminated with saline compounds.

I may state yet that, when diluted with distilled water and kept for two or three months, Bowers’ inodorous glycerin remained perfectly limpid, while the Vienna and Western glycerin produced, in the course of two or three months, a quantity of *confervæ*. This may probably be another test, not so much for the *absolute* purity, but rather for the presence or absence of those odorous organic compounds.

ON IODINIZED SYRUP AND ELIXIR OF HORSE-RADISH.

MR. EDITOR:

Dear Sir,—After reading over your editorial in the American Journal of Pharmacy, January, 1867, I feel somewhat encouraged to forward to you, for publication, the two following formulas, “no matter how meagre or unscientific they may appear,” hoping a few of your readers may find some interest in them.

The first formula, “iodinised syrup of horse-radish,” much like the “sirop de Raifort composé” of the French codex, differs from it by an addition of iodine, which increases the alterative properties of this very popular remedy.

The second formula, “elixir of horse-radish, &c.,” is a modification of the first one, under another form, and with the addition of pyrophosphate of iron.

These two preparations are much prescribed here by physicians who are aware of their composition. This, together with my dislike of selling secret medicines of my own, and my desire to be agreeable—useful, if possible—to members of the medical and pharmaceutical profession, have prompted me to publish these formulas.

Yours, very respectfully,

E. FOUGERA.

New York, June 12, 1867.

Iodinised Syrup of Horse-radish.

After the formula of N. Lancelot, Phar. lauréat of Paris.

1st. Fresh scurvy grass,	Cinnamon buds, 0.500 kilo.,
Fresh water cress, <i>aa</i> 10 kilo.,	White wine, 40 litres.
Orange peels, 2 “	

Contuse the substances, macerate 48 hours, then distil in water bath to obtain 10 litres.

2d. Fresh horse-radish, 10 kilog., White sugar, 20 kilog.

Cut the horse-radish by slices, contuse it with the sugar, dissolve without heat the saccharated magma in water q. s., add the 10 litres product of the above distillation, and press the whole through linen, so as to obtain a total volume of 32 litres.

3d. Simple syrup, 33 litres, Iodine, in powder, 420 gram.

Divide the syrup and iodine in several glass-stoppered bottles,

expose to a moderate heat in water bath, shaking occasionally, till the syrup, from a red brownish color, has passed to a white one.

Mix this syrup with the above 32 litres, and pass through flannel, so as to obtain, in all, 65 litres.

Dose for adults a tablespoonful; for children a dessert or a teaspoonful, always three times a day, at meal hours.

Each tablespoonful contains of iodine two grains.

Iodo-ferro-phosphated Elixir of Horse-radish.

N. B.—This Elixir is to be kept in a dark place, as it is altered by the light.

1st. Fresh scurvy grass,	Cinnamon buds,	0·100 kilog.,
Fresh water cress, <i>aa</i> , 10 kilog.,	Cardamom,	0·100 “
Orange peels,	0·500 “	Mace,
Angelica root,	0·200 “	White wine,
		40 litres.

Proceed as before in foregoing formula, under No. 1, to obtain also 10 litres.

2d. Fresh horse-radish, 10 kilog., White sugar, 20 kilog.

Operate as in first formula under No. 2, also to obtain 32 litres.

3d. Simple syrup, 10 lit., Iodine, in powder, 420 gram.

Expose to a moderate heat, as in first formula, under No. 3.

4th. Water, 17 lit., Pyrophosphate of iron, 840 grm.

Dissolve by heat.

5th. Inodorous alcohol 95°, 6 lit.

Mix all the liquids together, and filter so as to obtain in all 65 litres. Same doses as for the iodinised syrup of horse-radish.

Each tablespoonful contains of iodine 2 grains, of pyrophosphate of iron 4 grains.

PHARMACOPŒA HELVETICA. SCAPHUSIÆ EX OFFICINA BRODTMANNIANA, CHR. FR. STÖETZNER; 1865.

(Continued from page 212.)

Auro-natrium chloratum is made in the usual way, from 6 parts pure gold and 10 chloride of sodium.

Bismuthum nitricum. The metal is first freed from arsenic by

fusing a mixture of 64 bismuth in powder, 3 carbonate of soda, and 7 sulphur. The purified metal is dissolved in nitric acid, the solution diluted with water, filtered through gun cotton and crystallized. The crystals are first triturated with 4 parts, and then mixed with 25 parts distilled water.

It was, we believe, Duflos who first proposed the preparation of ternitrate because it crystallized free from arsenic; his process was subsequently adopted into most pharmacopœias of continental Europe, and is substantially the above. The test for arsenic can scarcely be considered delicate enough; it consists in precipitating the solution in nitric acid by sulphuretted hydrogen, digesting with sulphuret of ammonium, and treating the filtrate with hydrochloric acid.

Calcium sulfuratum. Equal parts of burned lime and sublimed sulphur are ignited for half an hour in a Hessian crucible.

Chinum sulfuricum is prepared in chemical manufactories, but is tested for its purity by the usual tests.

Chinum purum is quinia precipitated by caustic soda.

Chloroformium is prepared by adding to a mixture of 15 parts chlorinated lime (containing one-fifth active chlorine) and 90 parts hot water, one part alcohol of .837, as soon as the temperature has reached 70° C. (158° F.) The crude product is washed with water, then treated with sulphuric acid (quantity not given), rectified from a steam bath, and preserved from contact with the light. Spec. grav. 1.49. The total absence of alcohol is proved by the bichromate of potassa test. Litmus, sulphuric acid and nitrate of silver are not affected.

According to our experience on a large scale, this process is objectionable for the large amount of water employed, and the high heat. With some modifications, the process of B. Hirsch (see Am. Journ. Ph. 1862, p. 42) has given us the best results. For purifying crude chloroform, the directions of our pharmacopœia leave little to desire. In regard to the specific gravity, and to the total absence of alcohol, we have expressed our views on another occasion, and reiterate from experience since had, that the addition of sufficient pure alcohol to reduce the gravity to about 1.480, is preferable.

Cuprum sulfuricum ammoniatum is precipitated by alcohol from a solution of sulphate of copper in ammonia.

Ferrum aceticum is an excellent preparation, being the dry salt in a state perfectly soluble in water and alcohol. Peroxide of iron, freshly precipitated by ammonia, is washed with cold water, digested in acetic acid for 6 hours at 40 to 60° C.; after standing over night the clear solution is decanted, *not filtered*, and evaporated at between 60 and 80° C. It contains about half its weight of oxide of iron.

Ferrum carbonicum is a wrong name for the preparation official here as Ferri subcarbonas, a name not much more appropriate.

Ferrum carbonicum saccharatum, prepared by drying the protocarbonate obtained from 12 p. sulphate of iron, with 5 p. sugar, contains about one-fourth its weight of iron, and is a very appropriate compound.

Ferrum jodatum contains about double the amount of iodine as the same measure of our syrupus ferri iodidi, but is free from sugar and therefore unstable.

Ferrum jodatum saccharatum is the dry salt preserved by sugar of milk, in the proportion of 5 parts to one of iodine.

The Pharmacopœia orders also proto- and sesquichloride of iron in crystals, ammonio-citrate, lactate, peroxide, proto-peroxide, phosphate (blue), powder obtained mechanically and by hydrogen, and sulphate of iron.

Glycerinum has only a specific gravity of 1.227 to 1.230; a pale yellowish article, otherwise pure, is allowed.

Corrosive sublimate, calomel (prepared by subliming the former with mercury), white precipitate, iodide and biniodide, oxide and black sulphuret of mercury, correspond with our preparations. Protonitrate of mercury in crystals and solution, and Hahnemann's soluble mercury are likewise official, the latter under the incorrect name of hydrargyrum oxydulatum nigrum.

Hydrargyrum depuratum is made by digesting mercury with solution of sesquichloride of iron and washing with water.

Hydrargyrum sulfurato-stibiato s. *Æthiops antimonialis* consists of equal parts of the black sulphurets of mercury and antimony.

The preparations of potassium agree with those of our pharmacopœia, except that a pure carbonate is not ordered, but

merely the purified. Bromide and iodide of potassium are made by Frederking's process, thereby avoiding the very tedious washing of the precipitated protocarbonate of iron, rendered necessary by following the process of our pharmacopœia.

The proportion of carbonate of potassa and sulphur in *Kalium sulfuratum* is 3 : 2.

The preparations of magnesia are all made in chemical manufactories; the solution of the citrate is not officinal.

In Europe, sulphate of morphia is very rarely used; instead of it, the more soluble acetate and muriate are officinal; likewise the pure alkaloid; only the latter is directed to be made by the pharmacist.

All our soda salts, except the sulphite, are officinal. We consider it an unnecessary nicety to prepare the phosphate from phosphoric acid, made of phosphorus.

Plumbum jodatum is still prepared from acetate of lead; by the use of the nitrate, the loss of iodine would be less.

Plumbum tannicum humidum, for external use only, is obtained by precipitating a decoction of oak bark by subacetate of lead.

The preparations of antimony correspond with our officinal ones, except *Stibium sulfuratum aurantiacum*, golden sulphur, which is very properly made and obtained of uniform composition by the decomposition of Schlippe's double salt with sulphuric acid.

Veratrinum, *Strychninum nitricum* and *purum* are made in chemical laboratories.

A great loss of ether and alcohol takes place in the preparation of tannic acid, *Tanninum*. Eight parts of galls, in coarse powder, are digested with twelve parts ether and three parts alcohol; the operation is repeated, and the filtrate is mixed with one-third volume of water; after separation, the aqueous liquid is evaporated. If the first part of the process of our pharmacopœia is followed, the loss of ether is comparatively little, since a considerable portion may be recovered by distillation.

To obtain cream of tartar, free from lime, *Tartarus depuratus* is prepared by digesting, for two days, ten parts of powdered bitartrate of potassa with ten of water and one of muriatic acid, and washing with water.

Tartarus boraxatus. Three parts *Tartarus depuratus* and one

of borax are dissolved in twenty of hot water; the solution is evaporated and the residue powdered.

Tartarus ferratus is our *ferri et potassæ tartras*. The Swiss pharmacopœia contains a pure and a crude salt; the latter made from crude tartar, and designed chiefly for external use in baths.

In the process for chloride of zinc, our pharmacopœia assumes the presence of iron as an impurity, and uses chalk to separate it, thereby contaminating the preparation with a little chloride of calcium. The metal zinc, however, is directed to be entirely free from iron. The Swiss pharmacopœia uses oxide of zinc and pure muriatic acid, and thereby avoids the contamination and an inconsistency. The acetate and sulphate of zinc are likewise very properly prepared from the oxide.

Zincum cyanatum (not to be confounded with the non-poisonous ferrocyanide) is made by passing hydrocyanic acid into a solution of acetate of zinc. The ferrocyanide is obtained by double decomposition.

Of the valerianates, the zinc salt only is official.

(To be continued.)

GLEANINGS FROM GERMAN JOURNALS.

By JOHN M. MAISCH.

Diabetes. M. Pettenkofer and C. Voit observed that a patient who secreted, by the urine, in a day, 644 grammes of sugar, exhaled through skin and lungs 795 grammes carbonic acid, and inhaled 792 grammes oxygen, quantities agreeing with those of a healthy adult under ordinary circumstances. But the large quantity of food consumed by the diabetic patient would produce in a healthy man a much larger exhalation of carbonic acid, while the food which is sufficient for the latter would cause with the former a diminished use of oxygen and a diminished separation of carbonic acid—that is to say, he would be like a healthy person suffering from hunger. Pure meat and fat without carbohydrates, used as food, may diminish the secretion of sugar to 300 grammes, but do not cause its disappearance. In this case the sugar must be produced from the fat, and from the fatty body generated by the splitting of the albumen.

The proportion of inhaled oxygen to that contained in the exhaled carbonic acid is in hunger and with the use of meat as food 100 : 75; when using carbohydrates, 100 : 120; in the above observation, 100 : 73. The oxidation of the introduced carbohydrates is therefore impossible. If we assume that the normal number of blood corpuscles possess, in diabetes, to a less degree, the power to resorb oxygen, we are enabled to explain the symptoms of this disease. (Sitzungsberichte d. k. bayer. Akad. d. Wiss., 1865, II., 224—227.

Magnesia citrica solubilis. Dr. Hager analyzed the soluble citrate of magnesia prepared by Menier, of Paris, and found, in 100 parts, 14 parts magnesia and 71 parts crystallized citric acid (equiv. 201). The formula is $2\text{MgO}, \text{HO}, \text{C}_i + 8\text{aq}$. It may be prepared by dissolving five parts crystallized citric acid in ten parts distilled water, and adding one part recently-calced magnesia, or a corresponding quantity of carbonate, diffused in one part of water; the filtered solution is then evaporated until a pellicle forms, and set aside, when it partly crystallizes and partly congeals. Thrown into water, the crystallized portion dissolves first, afterwards the crystalline crusts. It is important not to use a trace of magnesia in excess, which would form the insoluble neutral citrate, and dispose nearly all the magnesia to separate in this form. Repeated heating appears to have the same effect, and it is advisable to boil the solution, without intermission, to the required point. (Pharm. Centralhalle, 1866, N. 40.)

Preparation of fruit syrups. Mr. Jessler states that the directions for their preparation, contained in the Pharmacopœa Germaniæ are the best, yielding a syrup rich in color, possessing the full flavor of the fruit, and being not liable to become turbid. The bruised fruit is allowed to ferment for two days, in cooler temperature for three or four days, merely to transform the pectin into pectic acid; the juice is now expressed, heated to 80 or 90° C., set aside for several days in the cellar, then filtered. Thirty pounds of the filtered juice are poured over fifty pounds of crushed sugar, heated to boiling in a bright copper kettle, strained, and, while still warm, filled in jugs, which are corked, sealed, and when perfectly cool, repeatedly shaken. The last

drop is as good as if freshly prepared. (Schweiz. Wochenschr. f. Ph., 1866, N. 26.)

Preservative against cholera. (See also Amer. Journ. Pharm., 1866, p. 46.) Dr. La Roche, of Kurnik, recommends quinia for this purpose, and states: I believe, that this remedy is of no less value against this disease than vaccination against the small-pox. Adults take, at the approach of the epidemic, twenty-four grains in hourly doses of two grains; afterwards, for three weeks, two grains three times a day, when the dose is diminished to two grains morning and night, and this continued until after the disappearance of cholera. Grown persons may take it in pills, children best in syrup of liquorice root. The regimen must, of course, be a proper one, and the well-known rules for the prevention of cholera must be strictly observed. I also warn earnestly from the repeated use of the so-called cholera bitters, liquors, &c., which are directly deleterious, and increase the disposition to this disease. They are the serpent among flowers. (Ph. Centralhalle, 1866, N. 40.)

Sulphuret of carbon in petroleum. Hager observed it in American petroleum; the portion distilling below 80° C. contains nearly all; the oil obtained above 120° C. is free from it. It may be removed by agitation with mercury, with or without the previous use of sulphuric acid. (Ph. Cent. Halle, 1866, N. 44.)

Protiodide of mercury. Dr. Rieckher proposes to triturate 100 parts biniodide with 44 parts metallic mercury, keeping the mixture moist with a little alcohol, and afterwards washing the product with alcohol, to remove biniodide. It is a dark green powder with a tinge of yellow.* (N. Jahrb. f. Ph., 1866, Jan. 21—24.)

Frederking uses 16 parts mercury, 10 parts sublimed iodine, and two parts alcohol; after the evaporation of the alcohol, he washes the preparation with two parts iodide of potassium in six parts water, then with pure water, and dries at a temperature of 20° C. The preparation is entirely free from biniodide

* This process was recommended by Winkler over twenty years ago, and Prof. F. J. Otto suggested to remove biniodide by alcohol.

and from iodide of potassium, and possesses a yellowish green color. (Pharm. Zeitschr. f. Russl., 1866, 382.)

New marking ink, by E. Jacobsen. No. 1. 8.52 grm. crystallized choride of copper, 10.65 grm. chlorate of soda, and 5.35 grm. chloride of ammonium are dissolved in 60 grm. water.

No. 2. Twenty grammes muriate of aniline dissolved in 30 grm. water, and mixed with 20 grm. mucilage of gum arabic and 10 grm. glycerine. Four parts of No. 2 are mixed, cold, with one part of No. 1, and this mixture is used for marking. The parts marked are held in the vapors of boiling water, which brings out the black color; after which the cloths on the parts marked are washed. (Ph. Zeitung.—N. Jahrb. f. Pharm., 1867, Jan. 46.)

Dusseldorf mustard. Prof. Artus recommends to mix $\frac{3}{4}$ lb each of white and black mustard with $1\frac{1}{2}$ lb hot water, 1 lb wine vinegar, $1\frac{1}{2}$ drachms cinnamon, 2 scruples cloves, $\frac{3}{4}$ lb white sugar, and 1 lb white wine. (Ibid.)

White liquid glue. L. Knaffl macerates three parts glue with eight parts water, adds one-half part muriatic acid and three-fourths part white vitriol, and digests for 12 hours at a temperature of 65 to 70 R. (Ibid., p. 47.)

Extraction of fixed oils. H. Vohl recommends coal oil of .650 to .700 spec. gr. for this purpose, which yielded very good products. (Ibid.)

Influence of nascent hydrogen on alkaloids. Professor Rochleder informs the Imperial Academy of Sciences at Vienna that he found that quinia, cinchonia and caffeina, which persistingly withstand the influence of oxidizing agents, are readily attacked by nascent hydrogen. The resulting products will be hereafter described. (Verhandl. d. Kais. Akad. d. Wiss. in Wien, 1867, 2.)

Coffeotannic acid, according to Prof. Hlasiwetz, is a glucoside, splitting, when boiled with alkaline solutions, into a sugar and coffeic acid, which, oxidized by fusing hydrate of potassa, yields acetic and protocatechuic acids. The formula of coffeotannic acid appears to be $C_{30}H_{18}O_{16}$, splitting, by uniting with $2HO$, into coffeic acid, $C_{18}H_8O_8$, and mannitan (?) $C_{12}H_{12}O_{10}$. (Ibid, 2, 3.)

Tea yields, according to Hlasiwetz and G. Molin, besides tannin, also gallic acid, oxalic acid and quercetin; the latter probably derived from quercitrin; boheic acid appears not to be a distinct compound. (Ibid., 3.)

Permanganate of potassa. J. C. Sticht employs the materials nearly in the proportion recommended by Woehler. 500 parts freshly prepared solution of potassa, of 45° Beaumé, are evaporated with 105 p. pure chlorate of potassa; 182 parts of black oxide of manganese are gradually added, and the mass rendered anhydrous, when it is allowed to cool, with continued agitation, to obtain it in a coarse powder. This is heated in small iron kettles, of about 3 gallons capacity, to dull redness and semifusion. When cool the mass is removed, broken into small pieces, and heated with water. The red solution is allowed to rest for 12 hours, then drawn into copper kettles and evaporated below the boiling point; when disposed to crystallize on cooling, the fire is withdrawn, and after some time the clear liquid drawn into crystallizing vessels of copper or stone. The crystals are collected in a glass filter, washed with some cold water and dried. The residue in the iron kettle is exhausted with water and crystallized in the same manner. The weakest solution may be used for the next operation. When the liquor assumes a green color it contains manganate of potassa and chloride of potassium, and may be used for the generation of chlorine by the addition of sulphuric acid, or converted into permanganate by passing chlorine through it, when 25 per cent. more of that salt may be obtained. 182 lbs. black oxide of manganese yielded 98 to 100 lbs. permanganate of potassa in long crystals. (Wittst. Vierteljahresschrift, 1866).

Fuchsin as a test for alcohol in volatile oils was recommended by Puscher. H. Zeise finds that fuchsin is dissolved by the freshly distilled oils of bitter almonds, cloves, cinnamon, cinnamon-buds, coriander, allspice, mustard, and white sandal wood; old oil of peppermint and of crisped mint likewise dissolve it. It was however found to be insoluble in the oils of cascarilla, copaiba, cubebs, sassafras, mace, pepper and ginger. (N. Jahrb. f. Ph., 1867, Febr., 81).

ON THE PREPARATION OF SPIRIT OF NITROUS ETHER.

BY THEOPHILUS REDWOOD, PH.D.,

(Professor of Chemistry and Pharmacy to the Pharmaceutical Society.)

An impure spirituous solution of nitrous ether has been long and extensively used in medicine, under the several names of *Dulcified Acid of Nitre*, *Sweet Spirit of Nitre*, *Spirit of Nitric Ether*, and *Spirit of Nitrous Ether*. It appears to have been first vaguely described as far back as the thirteenth century, by Raymond Lully, but it was more prominently brought into notice by the great champion of chemical medicines, Basil Valentine, about two hundred years later. The process generally adopted for its preparation has consisted in distilling a mixture of nitric acid and spirit; but several modifications of the process have from time to time been made, the proportion of acid in relation to the spirit having been frequently varied, and other alterations effected, with the view of meeting difficulties that have presented themselves, or of obviating objections that have been found to apply to the products obtained.

In 1746 this preparation was first introduced in the London Pharmacopœia under the name of *Spiritus nitri dulcis*, which was changed in 1788 to *Spiritus ætheris nitrosi*, and again in 1809 to *Spiritus ætheris nitrici*.

The process given in the London Pharmacopœia of 1746 consisted in submitting to distillation a mixture of six troj ounces of strong nitric acid, of about 1·5 specific gravity, with thirty-two fluid-ounces of rectified spirit. This process remained unaltered until 1809, when the proportion of nitric acid was reduced to one-half. In 1824 a slight change was made in the quantity of spirit directed to be distilled from the mixture, which was equivalent to reducing the proportion of acid. The next change was made in 1851, when the proportion of acid was still further diminished, and a weaker acid, of specific gravity 1·42, was directed to be used. The process now consisted in mixing $3\frac{1}{2}$ fluid-ounces of nitric acid (sp. gr. 1·42) with 2 pints (40 fluid-ounces) of rectified spirit, and distilling 28 fluid-ounces of product from the mixture.

It will thus be seen that the changes which have been made

in the process of the London Pharmacopœia have all been in one direction, and have consisted in a succession of reductions in the proportion of nitric acid employed. The object appears to have been to avoid the violent reaction which occurs when strong nitric acid and rectified spirit, in certain proportions, are submitted to distillation. When nitric acid of specific gravity 1.42 is employed, little or no chemical action occurs unless the proportion of acid to spirit be at least one to four by volume. If the proportion be one to three, the action is violent and uncontrollable; in fact, in operating on more than small quantities of material, the process under these circumstances is not unattended with danger. As the chemical action becomes more intense it assumes a more complex character, large quantities of uncondensable vapors are given off, and much waste of spirit and of acid necessarily ensues.

The following experiments were made to determine the limits in the ratio of acid and spirit, within which mixtures of nitric acid (sp. gr. 1.42) and rectified spirit, when submitted to distillation in the usual way, yield nitrous ether suitable for use in medicine:—

1. A mixture of one fluid-ounce of nitric acid and three fluid-ounces of spirit was put into a retort, furnished with a thermometer, and to which an efficient condenser was attached. The heat of a lamp was applied until the temperature rose to 185°, when, chemical action having commenced, the lamp was extinguished and the process allowed to proceed spontaneously. The temperature of the liquid quickly rose to 205°; a violent reaction occurred, and much of the vapor which passed over escaped in the uncondensed state. After a short time the temperature fell to 175°, but again rose spontaneously to 190°. When the action finally subsided, there were two fluid-ounces of condensed liquid in the receiver, and nine fluid-drachms of a strongly acid liquor left in the retort.

2. A mixture of one fluid-ounce of nitric acid and four fluid-ounces of spirit was submitted to distillation with an arrangement such as was adopted in the previous experiment. A little pure spirit came over in the early part of the experiment, but this was soon followed by the production of ether, which commenced when the

temperature had reached 195° . The action was not so intense as in the previous experiment, and therefore the heat of the lamp was not withdrawn, but the flame was lowered. The temperature of the liquid in the retort rose to 200° , but afterwards fell to 185° , without any alteration in the source of heat; at this temperature ether came over freely, but without altering the flame of the lamp the heat of the liquid in the retort rose to 195° before the action ceased. The distilled product amounted to two and a half fluid-ounces, and the residue in the retort to seven fluid-drachms.

3. A mixture of one fluid-ounce of nitric acid and five fluid-ounces of spirit was submitted to distillation as in the previous experiment. When the temperature had risen to 185° , spirit began to pass over without any ether. The temperature gradually increased to 205° , with irregular ebullition, but still nothing but spirit passed over. The irregularity of the ebullition caused the temperature to vary between 200° and 205° , and this continued until six fluid-drachms of spirit had distilled, when chemical action commenced, and ether began to appear in the distilled product. The temperature now rose to 208° , and the action became so violent that much of the vapor escaped uncondensed. As the process proceeded, however, the temperature fell, and the action then became more regular and satisfactory. The result was that the total distilled product amounted to three and a half fluid-ounces, while seven fluid-drachms of liquid were left in the retort.

These experiments show that when a mixture of nitric acid and spirit is submitted to distillation, as it usually is in the preparation of sweet spirit of nitre, the proportion of spirit greatly exceeding that at which chemical action occurs and ether is produced, the first part of the process consists in the simple distillation of alcohol; and when this has been carried so far that the spirit which remains in the retort is about four times the volume of the acid, ether begins to be formed. The exact proportion of acid and spirit required for the production of ether depends upon the temperature at which they are brought into contact with each other, as will be seen from a comparison of experiments 2 and 3. The higher the temperature to which the mixture is sub-

jected, the larger is the proportion of spirit that may be present when the ether-producing action occurs; but if the temperature be above 200° , the action is liable to become so violent that much loss of product occurs, from the difficulty of condensing the vapors, and from the more complex nature of the reaction.

It has long been observed, in making spirit of nitric ether by the London process, that the nature of the product depends, to some extent, upon the quantity of ingredients operated upon, and the manner in which the heat is applied. If a small quantity of the mixture be submitted to distillation in a retort at as low a temperature as is sufficient for affecting slow distillation, the quantity of distilled product indicated in the Pharmacopœia may be drawn over without any appreciable amount of nitrous ether being formed, so that the product in such case would be little else than pure spirit. In operating on larger quantities, however, and especially in conducting the process with a steam-jacketed still, a better result is obtained, the distilled product being richer in ether, in consequence of the higher temperature attained in the process. But even in this case the result is unsatisfactory, for not only is the amount of ether produced small in relation to the nitric acid employed, but most of the acid and much of the spirit, mixed in the proper proportion for producing ether, would be left in the still as a waste residue, if the process be stopped at the point indicated. Practically manufacturers do not stop at this point, but continue the distillation, and thus greatly increase the strength of the product. There is, nevertheless, a limit beyond which the distillation cannot be carried without great detriment to the product, as the reaction becomes more and more complex as the process proceeds, and finally nitrous fumes are abundantly formed.

The nature of the reaction which occurs in this process has been investigated by many able chemists, who have shown that it varies greatly according to the conditions present, and that it is very complex, especially when the action is intense. Dr. Golding Bird, many years ago, and more recently Dr. Debus, have contributed to this investigation. Among the products of the reaction, in addition to nitrous ether and aldehyd, chemists have enumerated carbonic, formic, acetic, oxalic, lactic, saccharic

and glyoxalic acids. Hydrocyanic acid is also said to have been produced in some instances. I do not propose to enter, on the present occasion, into this part of the subject, beyond alluding to the fact, that, as these bodies are produced, there must be loss of alcohol and nitric acid, and there may be a material alteration effected in the composition of the distilled product. Intense action is therefore to be avoided, both on the ground of economy, and also with a view to the quality of the product.

I believe that the sweet spirit of nitre of commerce is always obtained by the distillation of a mixture of nitric acid and spirit, but manufacturers no doubt vary their methods of operating according to their knowledge and experience. The objects they have especially in view are, the means of satisfying the requirements of their customers, and of competing with each other in regard to quality and price. The article is manufactured upon so large a scale, and its market value is defined within such narrow limits, that any proposed alteration in the long established process for its production, that would materially alter its character or enhance its price, would be very unlikely to be generally adopted.

It is not in the dispensing of medical prescriptions that the great bulk of the sweet spirit of nitre of commerce is used, but as a popular remedy which the public are accustomed to prescribe on their own responsibility. As originally prepared, and as met with in commerce, it is an impure solution of nitrous ether in strong spirit. All the samples that I have ever examined, containing any appreciable quantity of nitrous ether, have also contained aldehyd, and I therefore consider commercial sweet spirit of nitre to be essentially a solution of nitrous ether and aldehyd. All the attempts that have hitherto been made to exclude aldehyd have practically proved failures, either by excluding at the same time the nitrous ether, or by unduly increasing the cost of the process, or by too greatly altering the character of the product. The London process failed from the first of these causes. The Edinburgh and Dublin processes have also equally failed from the latter causes, for as these processes consisted in the production of pure nitrous ether as a preliminary operation, by a somewhat wasteful method more applicable to operations on the

small than on the large scale, and the subsequent solution of the ether thus produced in spirit, in the one case in the proportion of one to four, and in the other, of one to ten, they have proved unsuited for the purpose of the manufacturer.

In the British Pharmacopœia of 1864 a new process was given for this preparation, under the name of *spirit of nitrous ether*, and great expectations were at first formed with respect to it. I need hardly say that these expectations have been disappointed. So much has been published by myself and others with reference to nitrate of soda, and its proposed use in the manufacture of spirit of nitrous ether, that it will be sufficient for me to state here, that this process has brought us no nearer than we were before to a satisfactory and available method of accomplishing what is required.

I have been engaged for a considerable time in submitting the various published processes for nitrous ether and sweet spirit of nitre to practical trial with the view of ascertaining which is the best, and have made a great number of experiments for the purpose of discovering a more satisfactory method of obtaining these products, and especially the latter one, than any of those hitherto adopted. I was anxious to find a process that would be suitable for the Pharmacopœia, and which, at the same time, would commend itself to the manufacturer, so as to induce its general adoption. To fulfill this object it was essential that the process should admit of application without difficulty on a large or small scale, with similar and uniform results, yielding a product resembling the best sweet spirit of nitre of commerce, at a cost not exceeding that at which it could be produced by any other known process. In the different attempts which have been made in this direction, both by myself and others, the object aimed at has been to set up a chemical action that can be regulated and controlled, so that while nitrous ether is produced in sufficient quantity there shall not be an undue formation of secondary products or an excessive destruction and waste of alcohol and nitric acid, as frequently occurs in the ordinary processes.

It has been proposed to effect the required object, (1) by adding the nitric acid to the spirit in successive quantities as the process proceeds; or (2) by altering the strength of the acid;

or (3) by interposing an inert medium between the acid and alcohol, through which they shall mutually pass by diffusion; or (4) by causing the nitric acid to be gradually produced in the retort by the decomposition of a nitrate; or (5) by substituting a nitrite for a nitrate; or (6) by substituting nitrous acid for nitric acid in the free state; or (7) by using some ingredient which, in the presence of the spirit, will convert the nitric into nitrous acid, without involving the destruction of alcohol and consequent formation of aldehyd and other secondary products.

The processes of the Edinburgh and Dublin Pharmacopœias belong to methods (1) and (2); they can only be practically applied on the small scale, and they are not economical. The process referred to under (3) is that of Dr. Black, which Berzelius preferred to all the others; but this, again, is not a manufacturer's process, and cannot be made such. It consists in putting into a long narrow cylindrical vessel 9 parts of rectified spirit, then introducing beneath this, by means of a funnel-tube reaching to the bottom of the vessel, 4 parts of water, so that it shall form a distinct stratum beneath the spirit, and afterwards introducing in the same way, beneath the water, 8 parts of strong nitric acid. These are allowed to stand undisturbed, for two or three days, in a room at a uniform temperature, not exceeding 53° . At the end of the process, when carefully conducted, a stratum of nitrous ether is found floating over an acid liquor. The method referred to under (4) presents no advantage over (1) and (2); (5) is the process of the British Pharmacopœia of 1864; and (6) is Liebig's process, which, although presenting some advantages, is liable to become unmanageable when anything more than small quantities are operated upon, and is, in other respects, unsuited for operations on a large scale. The last of the methods referred to (7), appeared to me to present the greatest probability that a process might be founded upon it capable of accomplishing what is required.

Kopp's process for the production of nitrous ether, consists in heating a mixture of equal volumes of rectified spirit and nitric acid, sp. gr. 1.36, in contact with copper filings, and, when chemical action has commenced, withdrawing the heat and allowing the distillation to go on spontaneously. This process answers

well for the purpose for which it was intended, and it was in working with this process and making some modifications in it, that I discovered one which appears to present advantages over any other process I know for the preparation of spirit of nitrous ether. There appeared to be some difficulty in adopting even a modification of Kopp's process on account of the increased consumption of nitric acid which it involved and the cost of the copper consumed in the process, for the nitrate of copper that would be formed, if the process were generally used in a manufacture of this extent, would not be likely to find a market. Other substances, acting in the same direction as the copper, for deoxidizing the nitric acid, were tried, but without much success. I am informed that manufacturers sometimes use iron as well as copper stills in making sweet spirit of nitre, and thus get better results than are obtained when the distillation is effected in glass or stoneware; but in my experiments I have not obtained any satisfactory results by the use of iron. Several experiments were made with starch, and also with sugar and glycerine. Many years ago, in 1850, Mr. Grant, of Bristol, suggested the use of starch instead of copper in Kopp's process; but in attempting to apply it in the preparation of spirit of nitrous ether, with an increased quantity of spirit in contact with the nitric acid, I have found that the starch remains undissolved and unaltered in the mixture of spirit and acid until so much spirit has been distilled off as to leave the nitric acid with about four times its volume of spirit, when nitrous ether begins to be formed. This, however, is just the point at which the ether would be formed if there was no starch present. The starch certainly acts beneficially in one respect,—its particles diffused through the mixture of acid and spirit cause the liquid to boil more freely and regularly than it otherwise would, and the temperature is therefore less subject to variation than it is in the distillation of the acid and spirit alone. When the formation of ether has commenced the process proceeds satisfactorily for some time, but at last a very violent reaction takes place, and nitrous fumes are copiously evolved, which, if allowed to pass into the distillate, would render the product unfit for use.

As the starch remains in an insoluble state in the mixture until

it is acted upon at the end of the process, I thought there might be an advantage in substituting some other organic body of a similar description that would be soluble in the spirit. Grape sugar and glycerine were thus tried, but with no better success than was obtained with starch. In using glycerine, however, a practical difficulty was experienced; it was found almost impossible to distil a mixture of nitric acid, spirit, and glycerine in a glass vessel, on account of the violent bumping which takes place, and which endangers the safety of the apparatus. In this respect, therefore, glycerine produces an effect the reverse of that produced by starch.

Finding that of all the reducing agents tried, copper was that which acted in the most satisfactory manner, I returned to it, and endeavored to overcome the objections that had presented themselves to its use. My object was not to produce pure nitrous ether, but good sweet spirit of nitre, and therefore the quantity of spirit required for this purpose was used. I found that in distilling a mixture of nitric acid and spirit in contact with copper, if the proportion of spirit to the acid was more than one to five by volume, the copper was but slightly acted upon; and here, as in the other cases noticed, the formation of nitrous ether did not take place to any appreciable extent until the proportion of acid to spirit was reduced to about one volume to four. The process then proceeded with great regularity, the proportion of ether in the distillate increasing as the liquid in the retort became more highly charged with nitric acid; but it was only during one short period of the process that the best result occurred, and with this exception the distillation yielded little else than pure spirit. In endeavoring to equalize the action and diffuse it through the entire process I tried the effect of adding a portion of sulphuric acid to the other ingredients, and in this way I completely accomplished the object.

After a great many trials, in which the ingredients were used in different proportions, I adopted the following process as one in every way suited for the production of spirit of nitrous ether, equal in strength and similar in composition to that described in the British Pharmacopœia :—

Take of Nitric Acid, sp. gr. 1.42,	3 fluid-ounces.
Sulphuric Acid, sp. gr. 1.843,	2 fluid-ounces.
Copper, in fine wire (about No. 25,)	2 ounces.
Rectified Spirit,	3 pints.

To one pint of the spirit add gradually the sulphuric acid, stirring them together; then add, in the same way, $2\frac{1}{2}$ fluid-ounces of the nitric acid. Put the mixture into a retort or other suitable apparatus, in which the copper has been introduced, and to which a thermometer is fitted. Attach now an efficient condenser, and applying a gentle heat, let the spirit distil at a temperature commencing at 170° Fahr., and rising to 175° , but not exceeding 180° , until 12 fluid-ounces have passed over and been collected in a bottle kept cool, if necessary with ice-cold water; then withdraw the heat, and having allowed the contents of the retort to cool, introduce the remaining half-ounce of nitric acid, and resume the distillation as before, until the distilled product has been increased to 15 fluid-ounces. Finally, mix this with the remaining two pints of spirit.

In this process, when the heat has been applied, and the temperature of the liquid has reached about 150° , numerous minute bubbles of gas are observed to issue from the surface of the copper, and these increase until the temperature has reached 170° , when nitrous ether begins to be formed, and the liquid, at the same time, becomes colored with a salt of copper. The temperature now quickly rises to 175° , at which, if the heat applied to the retort be properly adjusted, it will remain with scarcely any variation throughout the process. At the temperature of 175° the distillation proceeds rapidly and steadily, the surface of the liquid in the retort being covered with a froth of about half an inch in thickness, and the space above it being filled with a transparent vapor of a yellowish color. This color is not due to the presence of nitrous fumes, but appears to be that of the ethereal vapor. The effervescence in the liquid is evidently not that of ebullition, but of chemical action, and this does not alter either in its nature or intensity, the distilled product continuing unchanged from first to last. I have never found it necessary to alter the source of heat while the distillation is proceeding if it be properly adjusted at the commencement, and the process

will often go on to the end without a variation of more than one or two degrees of temperature. When about twelve fluid-ounces of liquid have been distilled the action will slacken, in consequence of the exhaustion of the nitric acid, and this will be immediately indicated by the disappearance of the froth on the surface of the liquid. The suddenness with which this usually takes place is remarkable. It is followed by a rise of temperature in the liquid, if the applied heat remain unaltered, but when the temperature reaches 180° the heat should be withdrawn, and the contents of the retort allowed to cool. There will still be a portion of the spirit left in the retort, together with sulphuric acid, sulphate of copper, and undissolved copper, and it is for the purpose of converting this spirit into nitrous ether that the remaining half-ounce of nitric acid is to be added. When this addition has been made the distillation is to be resumed as before, until the distilled product amounts to 15 fluid-ounces. This product consists of a strong spirituous solution of nitrous ether containing thirty-five per cent. of the crude ether. On mixing it with the remaining two pints of spirit, it will have the strength indicated in the British Pharmacopœia of 1864, and will nearly answer to the other tests and characters there given. The specific gravity will be 0.845. If it be mixed with twice its volume of a concentrated solution of chloride of calcium, from two to three per cent. of nitrous ether will separate and rise to the surface of the liquid. This indicates the presence of ten per cent. of ether, as eight per cent. remains unseparated.

Spirit of nitrous ether made in this way, is, I believe, equal in every respect to that produced by any of the previously adopted processes, and it is better and stronger than most of what is met with in commerce. It is much stronger than that made by the London process, although the quantity of nitric acid employed in its production is less than one-half, and the loss of spirit is less than one-third, what they are in that process. It is therefore a very economical method of preparing the product; in fact it surpasses all the other processes in this respect, as there is no avoidable loss of nitric acid or alcohol, and the copper which is dissolved is recovered as sulphate of copper. Only about half the quantity of copper used, however, is thus dissolved; that

which remains may be employed in a subsequent operation. But the principal recommendation to the process is that it affords the means of obtaining spirit of nitrous ether, on the large or small scale, of definite and uniform strength, and composition, and of perfectly good quality. As these objects can be thus attained with ease and certainty, without any increase, but rather at a reduction, of cost, there will be no excuse for any other variation in the product than such as may arise from the change which necessarily takes place to some extent when it has been long kept in contact with the air.

Having now explained the practical details of this process, I shall not pursue the subject further on the present occasion, but reserve for a subsequent communication the notice of some points in connection with it, the investigation of which I have not yet completed.—*London Pharm. Jour.*, March, 1867.

NEW MODE OF PREPARING MERCURIAL OINTMENT.

By J. H. HART, Apothecary, New Orleans.

Finding the mercurial ointment, as usually met with in commerce, to vary in strength and purity, and many complaints by physicians having been made of its irritating effects, I would suggest the following mode of preparing the same, as offering the advantages of certainty, freshness and easy execution :

Take of stearine* and mercury, each . . . 1 lb.

Tinct. benzoin (saturated) . . . 4 drachms.

Into the mortar in which the ointment is intended to be made place a freezing mixture of ice pounded, 12 ; salt, 5 ; potass. nit. 5 parts. Introduce into this the mercury contained in a test tube, or other suitable vessel ; allow it to remain till the temperature has fallen to 32°, or below ; remove and wipe the mortar thoroughly dry ; immediately introduce the stearine and mercury ; when the trituration is nearly completed, add the tinct. benzoin by small portions at a time. In this manner, under favorable circumstances, 2 lbs of ointment can be made in 15 minutes. The tincture of benzoin can be omitted, if desired, but will be found of great benefit in retarding rancidity.—*The New Orleans Med. and Surg Journ.*, May, 1867.

* Lard deprived of its fluid parts by strong pressure.

ON A CASE OF BROMINE POISONING.

BY SAMUEL P. DUFFIELD, PH. D.

On the 10th of March I ordered C. W., an employee in the laboratory, to prepare some bromide of ammonium. The process given was that of Wittstein, which consists in first forming a solution of bromide of iron, under water in a large glass balloon by the reaction of bromine upon iron turnings, and then decomposing the bromide of iron by liquor ammoniæ, filtering and evaporating to crystallization. Notwithstanding having cautioned him about inhaling the vapor, he carelessly poured rapidly, into the large glass, three pounds of bromine, which evolved vapor to quite a dangerous extent, and which he inhaled.

I was first aware of the fact by one of the workmen running to me and saying "Carl is dying." On coming to the patient I found him perfectly asphyxiated, not able to give me any intelligence as to what was the cause, but on entering the furnace room, I perceived the fumes of bromine, and, of course, realized what the true state of affairs was.

The corrosive action of the bromine was such that the glottis had closed with a spasm, and did not seem to be willing to yield. I tried ammonia vapor, but as he could not breathe, it was of no avail. I drew out the tongue, and the air would fairly whistle through the glottis, and then the spasm would shut it down tight again. For a few seconds I was unable to devise a plan, but finally based my plan upon the chemical fact that bromine, like chlorine, acts by its absorption of water from the tissues, and I thought if I could again moisten the bronchi that I might save him. Having brought him near to a flexible steam pipe we use for boiling, I made them hold the mouth open, and threw the steam from some distance, so as not to burn him, into his mouth and over his face. It had the effect. The spasm relaxed, and he was subsequently treated with ammonia vapor, and sent home to keep company with the tea-kettle. He assured me that until twelve o'clock that night he did not dare leave the tea-kettle for two minutes. The subsequent inflammatory action was easily controlled. What I wish to particularly call the attention of the profession to, is the great value of steam vapor in all cases poisoned by corrosive

vapors. Ammonia can also be used by saturating a handkerchief with a weak solution, and allowing the steam to blow through it. On referring, after the danger of the case was over, to works on the subject, I find neither BECK nor TAYLOR speak of bromine. While they recognize the compounds of this halogen with others, they do not speak of its peculiar poisonous effect or its mode of treatment. Of course, when a corrosive poison has been swallowed the treatment is entirely different.—*The Detroit Rev. of Med. and Phar.*, April, 1867.

NOTE.—A direct antidote to the poisonous effects of the inhalation of chlorine is sulphuretted hydrogen, which ought to answer in like cases of bromine poisoning; the halogen combining instantly with the hydrogen, liberates sulphur. We have tried it ourselves after accidentally inhaling chlorine and obtained immediate relief. J. M. M.

ON THE ACTION OF WATER UPON "CARBOHYDRATES" AT AN ELEVATED TEMPERATURE.

By O. LOEW.

It is well known that the carbohydrates are not decomposed with separation of carbon, at a temperature of 170° C. Cane-sugar yields at 160° levulosan and glucose, at 180° caramelan, at 200° caramel, assamar and caramelin, and at about 250° it yields with total decomposition aldehyd, acetone, acetic acid, furfural and carbon. But the decomposition takes place quite different if water is present. While dried sugar yields only levulosan and glucose at 160°, it is perfectly decomposed on heating with water in sealed tubes at the same temperature.

This decomposition is accompanied with the formation of carbonic acid and separation of carbon. Very nearly half of the carbon contained in the sugar employed is thus separated. If the black mass contained in the tube, which has a strong acid reaction, is distilled with water and the distillate saturated with carbonate of lead, and evaporated, a salt is obtained giving all the characteristic reactions of formic acid. I obtained the following results on analysis:

0.5800 grm. gave 0.593 sulphate of lead, 0.728 grm. gave 0.210CO₂ and 0.046 water.

	Calculated.	Found.	
Pb	69.69	69.84	} = Formiate of lead.
C	8.08	7.87	
H	0.66	0.69	

There is also formed in this reaction a small quantity of humic acid.

The specific action of the water in this decomposition seems to be that of an acid; for if sugar be heated with *alcohol* at the *same* temperature, in sealed tubes, it remains perfectly unchanged; not the smallest quantity of carbon is separated. Further, I have found that sugar is not decomposed by heating it with a solution of baryta in heated tubes at 170° C. Beautiful needles of sugar-baryta only are formed.

Water has the same action upon other "carbohydrates." Starch, gum, or milk-sugar heated with water to 170° for about five hours, gives formic acid, carbon and carbonic acid; gum yields the most carbonic acid. There is also formed a peculiar acid, but little soluble in water, though easily in alcohol and ether. I propose to make this acid the object of further study.—*The Am. Journ. of Science and Arts.*, May, 1867.

CALX SACCHARATUM, SYRUPUS CALCIS.

MESSRS. EDITORS,—I enclose a letter from Dr. Squibb, of New York, which I received with some lime prepared with sugar. I trust that those who have undertaken to make the syrup and failed, will not be discouraged. I must caution against the use of the article in pill or dissolved in water, as it will produce nausea, or even a caustic effect. It should be given in milk. I have used it in doses as large as forty-five (45) drops every two (2) hours. Generally, thirty (30) drops every three (3) hours have been sufficient. I have never found alkaline urine to follow its use, no matter how large nor how frequent the dose.

Very truly yours,

Boston, March 31, 1867.

CHAS. E. BUCKINGHAM.

DR. C. E. BUCKINGHAM, Boston.

Brooklyn, March 16, 1867.

Dear Sir,—Your paragraph, on the back of the reprint from the Boston Medical and Surgical Journal, came duly and has

occupied me ever since, though it gave you little trouble to write. On the authority of the books, generally, I did not know whether you or they were wrong, and to determine this had to go over the subject practically. I will not trouble you nor take up my time with any detail, but give you the results to use as you see proper. Sacrate of lime is a very definite thing chemically, and is soluble to any extent in solutions of sugar. To make it, it is only necessary to have lime, either caustic or hydrated, no matter which, associated with about three times its weight of sugar; but to render it soluble an additional proportion of sugar is necessary. The best proportion, practically arrived at, was one part caustic lime, (or two parts hydrate or slaked lime), with eight parts of dry white sugar, rubbed together and poured into ten parts boiling water, and boiled a few minutes; then diluted with forty or fifty parts of cold water and filtered through white paper, and the filtrate evaporated until the residue is quite brittle when cold. This is then rubbed to powder, and best given in pill. The powder is, however, perfectly soluble in water, and if perfectly dried will contain between 8 and 10 per cent. of its weight of caustic lime. The powder may be dissolved in milk or any watery vehicle. A very good formula is to take of good clean well burned lime 400 grains, dry granulated white sugar 3200 grains. Triturate well together in a mortar, and then add the powder to f 3 viii. of boiling water contained in a proper vessel (well tinned iron or bright copper answers), and boil the mixture with constant stirring for five minutes. Then dilute to two parts with cold water, and filter through white paper. Finally evaporate to whatever consistence may be desired. If the evaporation be carried on until the liquid measures a pint, each fluid-ounce will contain about 24 grains of caustic lime, and this is about as dense a syrup as can be conveniently dispensed. If carried to f 3 xii. each fluid-ounce will contain about 32 grains of lime or 4 grains to the fluidrachm. But this syrup is too thick for convenient management in dispensing. If the evaporation be continued to dryness, great care must be taken to avoid discoloration and scorching, as the fluid thickens and tends to bake on the bottom of the vessel. As it thickens it must be stirred continuously and kept from adhering to the vessel until all becomes translucent,

tough and ropy. It finally becomes so tough as to be very difficult to stir properly, and when a small thread of it on cooling becomes very brittle and capable of being rubbed or crushed into small particles between the thumb and finger, the heating may be finished. When cold and brittle it should be rubbed to fine powder, and this powder, according to the extent to which the drying has been carried, will contain from 8 to 10 grains in the hundred of caustic lime.

The process is simple and easy, and requires so little skill and dexterity that any ordinary pharmacist of the most limited acquirements will be able to make it without difficulty.

With this statement and the samples sent you by express to-day (expense paid) you can have no difficulty in getting it made by any one of the many good pharmacutists in Boston.

Yours, &c.

E. R. SQUIBB.

The Boston Med. and Surg. Journ., April, 1867.

PTELEA TRIFOLIATA.

By JUSTIN STEER, PH. D.

This tall shrub, belonging to the family of Rutaceæ, is a very common plant in many parts of the United States, and generally abounds in rocky places. Its flowers have a peculiar, disagreeable odor, and its fruit is said to be sometimes used as a substitute for hops. The bark of the root has, of late years, acquired considerable reputation among physicians of the Western States, as a remedy for dyspepsia, and also as a general tonic.* The bark of the root was subjected to the following experiments, in order to ascertain whether its bitter and tonic properties were dependent upon berberin; this alkaloid having been found in a number of plants belonging to this same family. In connection with obtaining the alkaloid, a few preliminary experiments were performed in order to ascertain some of the constituents of the bark of the root.

I. A small quantity of the bark of the root was thoroughly

* See an article on *Ptelea Trifoliata*, by O. F. Potter, M. D., in Vol. 1, No. 1, page 9, St. Louis Medical Reporter.

dried, pulverized and completely exhausted with alcohol. The resulting tincture was of a yellowish brown color. The alcohol was then distilled off, until the tincture was reduced to one-eighth of its original bulk. Upon standing for a week it deposited small globules, which were of an oily nature. It was then shaken up and thrown into a large quantity of water, when there was precipitated a resin of a yellow color, which afterwards changed to a deep brown. When placed upon paper this resin produced a greasy stain. It was readily soluble in alcohol and ether, but only partly so in liq. potassæ and liq. sodæ. Its taste was oily, acrid and bitter, and its odor reminded one of the bark from which it was prepared. This was evidently an oleo-resin. The exhausted powder which remained in the percolator was then treated with a small quantity of tinct. iodinii, which immediately produced a deep blue color, indicating the presence of starch.

II. Another portion of the pulverized bark of the root was exhausted by percolation with cold distilled water, until it passed through colorless. The infusion thus obtained was heated to the boiling point, when there was formed on the surface of it a coagulum, which proved to be albumen. The albumen was then separated and the infusion, concentrated by evaporation, was then subjected to the test for tannin, by means of a solution of gelatine, which, however, produced no precipitate, showing the absence of tannin. Another infusion was then prepared as the above, and to it was added liq. plumbi subacetatis, which produced a yellowish white precipitate. This precipitate was collected on a filter and thoroughly washed with distilled water and dried. It was then mixed with alcohol and decomposed by the addition of SO_3 , which was added until it no longer produced a precipitate of sulphate of lead. The sulphate of lead was then removed by filtration, and the filtered liquid, which was of a bright yellow color, was allowed to stand for a length of time, when there was deposited a yellow crystalline substance, which was odorless, tasteless, insoluble in ether and water, but readily soluble in liq. potassæ, with which it produced a brilliant yellow color, and alcohol. With concentrated sulphuric acid it produced a beautiful purple color. This was then the yellow coloring matter of the bark.

III. The bark of the root was reduced to ashes in a crucible. The ashes were then digested in distilled water acidulated with muriatic acid. The liquor thus obtained was filtered and tested with the following reagents :

Oxalate of ammonia, which produced a white precipitate, showing the presence of a salt of lime.

Bi-chloride of platinum, a yellow crystalline precipitate, a salt of potassa.

Ferrocyanide of potassium, a light blue color, a salt of iron.

IV. The bark of the root was treated for berberin by the same process that is employed for obtaining this alkaloid from *Berberis vulgaris*. The bark of the root was pulverized and infused with boiling distilled water. The infusion was then evaporated to the consistency of a soft extract, which was exhausted with alcohol, and evaporated to a small bulk, and, while yet warm, sulphuric acid was added, when upon cooling the sulphate of berberin was obtained in small acicular crystals. The sulphate, having been dissolved in water, was then decomposed by oxide of lead. The liquid was then filtered and allowed to crystallize. The crystals thus obtained were very small, yellow and acicular. They evidently were berberin, as the following tests will show. They were soluble in water and also in alcohol, and insoluble in ether. They dissolved readily in sulphuric acid, producing an olive green color. With nitric acid they produced a blood red color. The sulphate of berberin, as prepared above, was precipitated from its solution by iodide and bromide of potassium, and also by bi-chloride of mercury. The taste of the sulphate and also of the isolated alkaloid was extremely bitter. Berberin, then, is the bitter and tonic principle of the bark of the root of *Ptelea trifoliata*, upon which its virtue depends.—*St. Louis Med. Reporter, May, 1867.*

MANUFACTURE OF BORAX.

Instead of the old process of neutralizing the Tuscany acid with soda and water, the English manufacturers now perform this operation in a reverberatory furnace, where the acid, with the required quantity of soda-ash, is brought into fusion, and

where provision is made for the escape and subsequent collection of the large quantity of fossil ammonia, which is always present in the crude acid. The whole process then is similar to the preparation of sal soda from cake. The oxide of iron which the concentrated solution holds in suspension is removed by the addition of a minute quantity of sulphuret of calcium cake, left from the extraction of crude soda. A sulphuret of iron forms, and also a voluminous precipitate of lime, which latter envelopes the iron compound and carries it to the bottom. This renders the solution somewhat alkaline.

Hayesite or Boronatrocaltite, from Chili, which occurs together with Chili nitre, and is a mixture of soda and lime-borate with up to 38 per cent. of water, the outer portions being often mixed with considerable quantities of gypsum, salt, etc., but even the best varying from 12 to 50 per cent. in boracic acid. Owing to the variability of its richness in that acid, the mineral is neglected as a source for borax, the more so since both the Chilian mineral and the Tuscan product are monopolized by one interest.—*Druggists' Circular, February, 1867.*

NOTES ON PRESCRIBING.

BY DANIEL HANBURY.

Although more than fifty years have elapsed since the learned Dr. Paris placed before the medical profession his observations on the theory and art of medicinal combination, it may safely be asserted that nothing has been since written on the same subject more replete with sound and accurate information.

Yet every year adds to our experience: not only are new drugs introduced, but new combinations and new forms of administration are also adopted; and the prescriptions of the present day differ as much in character from those that found their way to the druggist's counter half a century ago, as do the medicines then in vogue from those which are now in use.

The art of prescribing, it must be admitted, is not a subject coming precisely within the province of the pharmacist, yet the pharmacist is necessarily acquainted with the methods of prescribing which are prevalent and is more capable than any

other person of judging of the merits of formulæ under pharmaceutical and chemical aspects.

It has long appeared to me that some of these methods or modern phases of prescribing call for notice in the pages of the *Pharmaceutical Journal*, and in the hope that the subject may be further handled, I have thrown together the observations here presented. Some of the formulæ that I shall quote will afford evidence that the precepts of the author of the *Pharmacologia* and the rules of chemistry are too little observed, and that the duties of the private dispensary performed by many of the older physicians while practising as apothecaries, enabled them to avoid the errors and eccentricities into which some of their successors occasionally fall. The result of mixing the ingredients ordered in a prescription is sometimes very unexpected, so that even the most practised dispenser is often unable to predict whether certain given ingredients can be united into a compound that shall be suitable for administration:—and if the pharmacist whose time and skill are chiefly devoted to the mixing of drugs is thus at fault, it is hardly surprising that the physician whose mind is mainly directed to other subjects, should sometimes prescribe ingredients that it is impossible to combine, or that, if combined, cannot be taken, or are devoid of the required efficacy.

For convenience I shall place my remarks under different heads and shall notice firstly

Unchemical Formulæ.

As an example let us take the following:

R Barii chloridi gr. iss.

Ferri sulphatis gr. ij.

Extracti gentianæ q. s.

Ut fiat pilula.

The writer of this formula was a frequent prescriber of chloride of barium, which he generally ordered in combination with sulphate of quinine or sulphate of iron, or with both, thereby probably rendering the chloride inert. No reliance could of course be placed on the uniform effects of baryta, prescribed sometimes in a state of activity and sometimes in an inert form.

As another example of this character, take the following prescription which was brought to be dispensed a few weeks ago:

R Potassii iodidi ʒi.

Potassæ bicarbonatis ʒiss.

Ferri et quiniæ citratis ʒiv.

Tinct. valerianæ ammoniatæ ʒj.

Aquæ ad ʒiv.

Misce. Sumat cochleare medium ex aquâ ter die.

In preparing this medicine, the iodide and bicarbonate were dissolved in a portion of the water, to which the tincture was then added. The citrate was dissolved in the remainder of the water and the two solutions were mixed. The result, as might be expected, was that a frothy white precipitate of quinia was instantly formed, which in a few minutes collected into a coherent mass, sufficiently hard and tough to be rolled into pills.

It may be observed that in compounds such as this, the quinia is not subject to the remarkable influence which citric or tartaric acid exerts on peroxide of iron,—that of allowing it to be combined with an alkaline bicarbonate or with ammonia—but that it is more or less separated when such alkalies are mixed with it, a fact very often overlooked.

A third instance of extremely unsuitable combination occurs to me, which from its frequency a few years ago was impressed on my memory, although I have no copy of a prescription in which it was ordered. It was the prescribing of *glacial* phosphoric acid *in pills*, and that in combination with valerianate of zinc!

Formulae that give rise to unexpected combinations.

A very interesting fact bearing on this point has been stated in a recent number of the *Journal de Pharmacie et de Chimie*.* M. Melsens has proved by experiment that pure iodide of potassium may be administered to dogs in considerable doses without occasioning any ill effects; and that chlorate of potash in somewhat strong doses is also tolerated when administered continuously for at least a month. Treated with iodate of potash, however, dogs die rapidly. If iodide of potassium and chlorate of potash in equivalent proportions are given to dogs, such mixture speedily proves fatal;—and yet, as is well known, these salts do not under ordinary circumstances decompose one another. These

* November, 1866, page 338.

experiments have an important practical bearing on the art of prescribing, showing that medicines, harmless when administered separately, may become highly deleterious when given in combination.

The following case of unexpected change in the composition of a medicine was of actual occurrence. A prescription was written for a mixture of which the more essential ingredients were Rochelle Salt and Calcined Magnesia, the one dissolved, the other diffused in peppermint water. The mixture was prescribed and taken without particular remark, until, upon one occasion, recourse was had to a bottle which had been prepared some weeks before. The dose was found extremely different from any that had been taken previously : in fact it had so caustic a taste as to excite the alarm of the patient, who suspected a serious error on the part of the druggist. The physician was consulted, and finally an analytical chemist was requested to examine and report on the medicine. This resulted in an explanation:—the Calcined Magnesia, by prolonged contact with the alkaline tartrates, had gradually abstracted their tartaric acid, leaving their alkalies in a free and caustic state.

The dispenser of prescriptions is sometimes puzzled to know what *color* to make a medicine, the color being dependent *on the order* in which the ingredients are mixed. For instance, a lotion was prescribed composed of calomel, lime water, and chloride of zinc. If the calomel was decomposed first, the lotion was *black* : if the chloride of zinc first, it was *white*.

Lotions in which both chloride and bichloride of mercury are ordered with lime water, are easily made to vary from yellow to brown or black, according to the order in which the two mercurials are decomposed. A lotion made according to the following formula is either transparent and colorless, or opaque and of a brick red, according to the order in which the ingredients are mixed :

R Potassæ chloratis,
Boracis aa ʒss.
Hydrargyri bichloridi gr. iv.
Glycerinæ ʒss.
Aquæ ad ʒviij.

Misce.

Although hardly coming under this section, and rather deserving to be ranged under the head of *ill-contrived formulæ*, may be instanced the following:

R Unguenti hydrarg. nitratis ʒiij.

“ cetacei ʒj.

Liquoris potassæ ʒij.

Linimenti saponis ad ʒvi.

Misce. Sit linimentum capiti omni nocte infricandum.

R Confectionis opii ʒij.

Olei terebinthinæ ʒiss.

Sp. ammoniæ aromat. ʒiij.

“ camphoræ ʒiij.

Fiat linimentum.

R Potassii iodidi ʒi.

Morphiæ acetatis gr. x.

Aceti colchici ʒiv.

Olei sulphurati ʒi.

Misce. Fiat linimentum.

The next subject on which I must beg leave to offer a few remarks is the

Undue concentration of Medicines.

There is no practice in the modern method of prescribing more fraught with inconvenience to the pharmacist, and risk to the patient, than that of ordering medicines in an excessively concentrated form. The object for doing so is in most cases that the patient may obtain a large supply of medicine at a small outlay; in others, because medicine in a concentrated form is more convenient for being carried from place to place. That the prescriber should have a due regard for the pocket of his patient, and wish to diminish as much as possible the expenses attendant on sickness, is doubtless commendable. But when this is done at the expense of safety and of efficacy, it becomes an abuse which demands rectification.

All druggists know that forty or fifty years ago liquid medicines for internal use were very commonly prescribed in the form of *draughts*, or doses each contained in a single bottle;—that these have been gradually superseded by *mixture*s, containing

usually six, eight or twelve doses, and that these last are now often replaced by highly concentrated and smaller mixtures technically called *drops*, each bottle of which contains a large number of doses. Most will admit that the dispensing of medicines in the form of *draughts*, except in rare cases, involves more labor and expense than are necessary for any purposes of accuracy or convenience. But in resorting to the compounds which are now prescribed as *drops*, we are going to the other extreme. It is a practice of recent introduction and finds no place in the *Pharmacologia* of Dr. Paris, who does not give a single specimen of such a manner of prescribing.

As evidence of the objectionable character of prescribing medicine in a very concentrated shape, I shall quote a few prescriptions, all of which I have myself lately observed.

R Liquoris strychniæ ʒij.
 Tincturæ valerianæ ʒiij.
 Spiritûs chloroformi ʒj.
 “ camphoræ ʒiij.
 Magnesiæ sulphatis ʒj.
 Misturæ camphoræ ad ʒviij.

Misce. Sumat cochleare unum magnum pro dosi.

This mixture is too alcoholic to retain in solution the sulphate of magnesia, which, although first dissolved in the camphor julep, subsequently concretes into a crystalline mass.

R Liquoris Donovanii ʒviss.
 Potassæ bicarbonatis ʒv.
 Tincturæ calumbæ ad ʒiij.

Misce. Signa—Forty minims (by measure) in water twice a day after meals.

Here again the liquids are insufficient to dissolve the alkaline salt which remains at the bottom of the bottle as a dense white powder, not to be shaken up and poured into a minim measure.

R Chlorodyne ʒiss.
 Sodæ biboratis ʒj.
 Sp. camphoræ
 “ ammoniæ com.
 “ ætheris sulph. aa ʒss.

Misce. Take a small teaspoonful in a wineglassful of water when required, and repeat the dose every two hours until the pain is relieved.

The addition of the borax to the other ingredients occasions the separation of a sticky mass, which adheres to the sides and bottom of the bottle in such a manner that the intended dose cannot possibly be administered, a difficulty which would be entirely obviated had the mixture been ordered in a dilute form.

R Hydrargyri bichloridi gr. vj.
Liquoris arsenicalis ʒijss.
Tinct. cardamomi comp. ʒiij.
Aquæ ʒvj.

Misce. Sumat cochleare unum minimum bis die.

R Quiniæ disulphatis ʒss.
Acidi phosphorici diluti ʒx.
Liquoris arsenici chloridi ʒj.
Tincturæ ferri muriatis ʒxj.
“ aconiti ʒiij.
“ calumbæ ʒiss.
Glycerinæ ad ʒvj.

Sumat cochleare unum minimum pro dosi.

Medicines prescribed according to such formulæ as this and the preceding, are dangerous from their extreme concentration, and from the large quantity ordered rendering them liable to be mistaken for comparatively dilute mixtures taken in the dose of two or three tablespoonfuls.

R Tinct. aconiti (Flemming) ʒij.
Sumat gutt. j tertiis horis ex aquæ ʒij.
R Strychniæ gr. j.
Acidi phosphorici diluti ʒj.
Sumat ʒ v ex aquæ cyatho vinario ter die.
R Strychniæ gr. ij.
Aquæ destillatæ ʒv.
Solve ope
Acidi hydrochlorici diluti ʒ iv.
et adde
Vini ferri ad ʒx.

Misce. Signa—Take ten minims by measure in water every morning before breakfast, and increase the dose every other morning by one minim up to 18 or 20 minims.

R Ext. cinchonæ liquidi,
Liquoris calcii chloridi aa ʒss.

Fiant guttæ.

R Acidi arseniosi gr. ij.
Syrupi zingiberis ʒij.

Fiat mistura.

In the five formulæ above quoted, the medicines are ordered to be furnished to the patient in (as it seems to me) a form far too concentrated. By the first of them a bottle containing about 150 doses of the strongest Tincture of Aconite is supplied with directions that a dose is to be taken every three hours. In the second nearly a hundred doses of Strychnine are ordered to be placed at once in the hands of the patient. The third prescribes five weeks' supply of strychnine in a ten-dram mixture, and is also deserving notice for the complicated directions to the patient for calculating his dose. The fourth is objectionable from the fact that the ingredients are decomposed for want of a suitable excipient, the resin of the bark being precipitated on the bottom and sides of the bottle, so that it is impossible for the patient to obtain the intended dose. No such difficulty would arise if each ingredient were reasonably diluted previous to mixing, and the dose apportioned accordingly. The fifth formula is dangerous from ordering the arsenic to be treacherously disguised in the form of a very palatable syrup, which might in ignorance be taken far too freely.

The experience of any dispensing pharmacist will readily testify that prescriptions such as those here quoted are now-a-days by no means unfrequent. That they are highly objectionable all will allow, inasmuch as in many cases they do justice neither to the patient, the physician nor the pharmacist. Those of the last category are reprehensible for the sake of the patient, who is furnished with a large supply of potent, or it may be even dangerous medicine which is to be taken for a length-

ened period, almost according to his own pleasure and judgment ; for the sake of the physician, who by such prescriptions must often deprive himself of the opportunity of watching the effect of the remedies he orders ; and lastly for the sake of the pharmacist, on whom is thrown a heavy risk of error and accident, counterbalanced by no proportionate increase of profit, but actually accompanied by a much diminished scale of remuneration. —*London Pharm. Journ.*, March, 1867.

MEDICATED COCOA BUTTER.

BY FERRIS BRINGHURST.

Using considerable quantities of cocoa butter, and often having small pieces about, we have frequently given away or sold these for use as lip salve, and so much was it liked that it was evident that, if properly medicated and perfumed, and neatly put up, it would meet with a ready sale.

A camphor ice tray was accordingly procured of Prof. Parrish, some neat boxes, of proper size, with labels to suit, and the butter prepared from the following formula :

R. Yellow wax,	4 oz.
Cocoa butter (fresh),	28 oz.
Balsam Peru,	1 dram.
Benzoic acid,	1 “

Melt together, strain, and add oil of rose, bergamot and bitter almond, q. s. to perfume pleasantly, and when nearly cool 1 oz. glycerine.

If the cocoa butter is fresh, its own aroma is so pleasant as to require but slight addition of essential oils, those mentioned seeming to be more appropriate than any other combination.

My anticipations in regard to it were fully realized, and in less than two months after its introduction we had dispensed about two gross.

It is much prescribed by our physicians, and, though originally designed as an application to chapped hands and lips, it has been used for a variety of purposes, such as sore nose, sore mouth, sore nipples, chafes, as an after dressing for blistered

surfaces, &c. &c., in all cases exhibiting remarkable soothing and healing properties.

The perfect blandness of cocoa butter, its solidity yet ready fusibility at the temperature of the body, its tendency to keep well, especially when combined as above, and its unusual healing power, all recommend it as worthy of a more general use.—*The Report of the Alumni Assoc. of the Phila. Col. Pharm.*, 1867. *Wilmington, Del.*

OBSERVATIONS ON BENZOINATED OINTMENTS AND CERATES.

BY CHAS. L. EBERLE.

Since the introduction of benzoinated populinated and similarly treated cerates and ointments, their application has met with wide-spread favor, and it became desirable to determine in how far they might be therapeutically affected by the admixture.

Our Pharmaceutical Association proposed the subject in a query, which was accepted, and commented upon by Mr. Doliber, of Boston, at the last annual meeting of that body.

During the past year my attention was considerably directed to the determination of the query, and the subjoined remarks are offered in support of the assertion that, while rancidity in an unguent may defeat the purpose of its creation, and often do harm by the irritation it produces upon sensitive surfaces, the benzoinating process, under proper restriction, prevents the sensible properties of the same from modification or change, without in the least affecting its therapeutic action.

Where the unguents containing lard were prepared extemporaneously, that benzoinated, by furnishing the hog butcher with a quantity of tincture of benzoin, of the strength of four troy-ounces to one pint of stronger alcohol, to be incorporated in the proportion of one fluidounce to each pound, while the fat was still fluid and warm, and well stirred to expel the spirit, was used.

In other instances myroxylon was added, in the proportion of six drops to each ounce of dark colored, and three drops to the same quantity of those of light hue. This addition can best

be made at the point at which the cooling fluid will sustain the myroxylon upon its surface, dropping it upon the centre, and stirring slowly at first with the point of the wood spatula, gradually incorporating it with the mass.

Where this care is not observed the mass is disfigured with minute dark specks; and should the addition be made before the point in cooling mentioned is reached, a separation of constituents is effected, and collects as a resinous globule in the bottom of the vessel, and cannot afterwards be properly incorporated.

The process was applied to most preparations, officinal and otherwise, which in the course of business would suggest its use, since November, 1865, among which were the following:

Unguentum adipis,

- " Aquæ rosæ,
- " Gallæ,
- " Hydrargyri,
- " Hydrarg, oxid. rub.,
- " " nitrat.,
- " Plumbi carb.,
- " Zinci oxidi,

Cerat. plumbi subacet.,

- " Adipis,
- " Cetacei,
- " Zinci carbonatis.

They were dispensed at varying intervals, kept indefinitely well, and, upon inquiry instituted as to their behavior therapeutically, confirmed the supposition of their properties being unaltered by the combination.—*Report of the Alumni Assoc. of the Phila. Col. of Pharm.*, 1867.

Germantown, Pa.

SILVERING UPON GLASS.

Having occasion recently to silver some thin microscopic glass, several processes were tried with indifferent success, until finally I hit upon Bothe's method as modified by Böttger (*J. pr. Ch.*, xcii, 494) which afforded most excellent results. Its simplicity,

economy, and satisfactory performance induce me to reproduce it here.

7·8 grains of argentic nitrate are dissolved in 60 cc. of water and the solution is divided into two equal portions. A solution of 3·11 grams. potassio-sodic tartrate (Rochelle salt) in 1420 cc. of water being brought to *active ebullition*, one of the above portions of the silver solution is gradually added, the boiling is continued 8 or 10 minutes, the whole is allowed to cool and is then filtered. This is the reducing solution.

To the second portion of the silver solution, caustic ammonia is added till the precipitate is *almost* redissolved, care being taken to avoid an excess, and then 355 cc. of water being added, the whole is filtered.

To silver the glass, equal portions of these two fluids, thoroughly mixed and perfectly clear, are poured upon it. After the lapse of about *ten minutes*, a most brilliant layer of metallic silver is deposited, which may be thickened to any desired extent by repeating the process. The film is protected by a layer of varnish.—G. F. B.—*Amer. Jour. of Science and Arts*, March, 1867.

ASSAFÆTIDA.

By DR. J. E. POLAK.

Asafoetida, called in Persian *Anguzeh* (of which our word *asa* may be an abbreviation), and in Arabic *Heltit el mumtin*, was in former times abundant on the trachyte range lying between Ispahan and Mahiar. Thither the assafoetida collectors from Khorassan came every year in spring; they surrounded the plant with a bank of stones, cut off its stem, and then collected the gum-resin. But as they left no stem for producing seed, only some isolated plants are now to be found in this locality. The plant is however still plentiful between Abadeh and Murgab, where, as well as in the southern province of Laar, assafoetida is collected. About Abadeh in the spring the sheep feed on the leaves of the plants; and I was assured by credible witnesses that the milk and butter obtained from the animals thus pastured, is so foetid that none but the inhabitants can make use of them. I have also received from Herat, through an English physician,

several shoots which were quite covered with gummi-resinous tears. From the occurrence of the plant in the hot province of Laar and other regions it is evident that it is adapted to a warmer climate and a lower elevation above the sea-level.

The greatest quantity of assafoetida is exported to India, where it is employed for culinary purposes. It forms a frequent ingredient of the sauces eaten with the *pillaw*. Its medicinal use in Persia is very extensive, especially against spasm; there are persons who have so accustomed themselves to its use, that it has become to them as much a necessary of life as opium is to an opium-eater. In fact it exerts by long use a remarkable action in tranquilizing spasmodic pains, a property which deserves to be more regarded in Europe.

The young shoots of the plant, after immersion in vinegar, are willingly eaten by the Turkomans. In many parts of the country I was informed that they fence round the fields with assafoetida plants, as a protection from the attacks of insects.—*London Pharm. Journ.*, April, 1867, from *Persien; das Land und seine Bewhnor*. Leipzig, 1865. *Zweiter Theil*, p. 282.

ON THE CULTIVATION OF JALAP.

BY DANIEL HANBURY, F.L.S.

The considerations which render it expedient that the cultivation of Jalap should be attempted in some other country than that in which the plant is indigenous, are the following:

1. The present supply of Jalap is precarious and fluctuating.
2. The drug is often of bad quality even when genuine, owing to the rude method in which the tubers are dried, and frequently to their having been collected while too young and small.
3. The frequent admixture of other roots with the Jalap of commerce.

The cultivation of jalap, to be successful, must result in producing the drug identical in medicinal activity with that hitherto employed, of uniform good quality, of moderate price, and in sufficient quantity to be noticeable in the market. Experience alone can determine whether all or only some of these desiderata can be attained.

Let us now consider what is the climate, and what the soil, of the region in which the jalap-plant (*Exogonium Purga*, Benth.) naturally thrives,—and what the method actually pursued for collecting and preparing the drug for the market. On these subjects, the most graphic information that I have met with is contained in a letter addressed by Dr. Schiede, a German traveler and botanist, to Dr. D. F. L. von Schlechtendal; it bears date *Mexico*, 26 October, 1829, and was published in the periodical called *Linnaea* the following year. Of this letter, the following is a translation :

“Before I leave Chiconquiaco* I must communicate to you the most interesting facts which I have observed on the occurrence of *Convolvulus Jalapa*, as well as what I have learnt respecting the collection of the root and its preparation for the market. In my last collections from Jalapa, I sent you a large number of flowering specimens, and added a short description of the plant, so that this latter I may here omit.

“The herbaceous plant whose tuberous root furnishes the almost indispensable medicine called *Jalap*, does not grow in the immediate vicinity of Jalapa, but several thousand feet higher, on the eastern slopes of the Mexican Andes, especially about Chiconquiaco and the neighboring villages, and also, as I hear, about San Salvador, on the eastern slope of the Cofre de Perote. The mean altitude at which the plant occurs may be stated as about 6000 feet. In this region it rains almost the whole year through. During summer, fine clear mornings are commonly succeeded by violent showers in the afternoon; in winter indeed these latter do not occur, but dense mists lie for days and weeks with but few clear intervals, on the mountains as well as on their declivities. The plant prefers shade, and is found only in woods, where it climbs over trees and bushes. The flowers appear in August and September. The root is dug up during the whole year, but probably that is preferable which is collected before the young shoots appear,—that is to say, in March and April.

Note.—Chiconquiaco is a village situated on the mountain known as the Cofre de Perote, and in the region called by the Mexicans *Tierra fria*.—D. H.

The tubers are sometimes elongated, sometimes round, and always terminate in a rootlet. In the fresh state they are whitish, almost inodorous, and full of a viscid juice, which has a peculiar acrid taste. When collected, the larger tubers are cut through, but the smaller left entire. As drying them in the sun would probably be impracticable, they are placed in a net and then hung over the almost constantly burning hearth, where by degrees they dry, and by which process they almost always acquire a smoked appearance and somewhat sooty smell. In about ten to fourteen days the *Purga* is dry, and is then taken by the collectors, who are mostly Indians, to Jalapa, where it is bought up, and whence it is conveyed by way of Vera Cruz into the markets of Europe.

"The Indians of Chiconquiaco are commencing to cultivate the Jalap plant in their gardens. The future will show whether its powers are in any degree impaired by cultivation. Cultivation will afford the advantage that the roots may be collected at the most favorable time of year, which in the thick forests is attended with difficulty. I do not abandon the hope that *Convolvulus Jalapa* may some day be planted in our gardens on a large scale; is not the potato a native of a similar region? The plant will scarcely bear the severity of a German winter in the open air, but the spring and autumn frosts will not, I think, injure it, for it has to endure the same reduced temperature in its native home.

"I now hear that the root has also been exported from Tampico, which shows that it occurs northward of the mountains of Chiconquiaco, perhaps in the Sierra Madre."

To this account may be added a few lines extracted from a letter received from a valued correspondent of my own in Mexico, to whom I am also indebted for more than a hundred living tubers of the jalap plant.

"The tubers of Jalap require a deep rich vegetable soil (*debris* of the leaves of *Pinus*, *Quercus*, *Alnus*, etc.), and as they grow at an elevation of from 7000 to 10,000 feet above the level of the ocean, they can stand a good deal of cold and even frost during the night. In the daytime from 60° to 75° Fahr. is

their almost daily warmth. Around Cordova, the plant will not succeed, the climate being too warm. I would advise you to plant some of the tubers out in the free air, treating them like Dahlias,—that is, to take up the roots in October, and plant them again in March or April. Although the plants may not flower or ripen seeds, the tubers will grow in size, and, what is more important, will multiply underground *ad infinitum*. If Jalap roots have so far failed in Europe, it is because they have been treated as hothouse plants."

Having these data regarding the climate and soil which are natural to the jalap plant, we must next consider what regions offer conditions sufficiently similar to render the culture of the plant probably successful. It is plain from the accounts I have quoted that a humid climate having a temperature rising in summer to about 75° F., and sinking in winter to the freezing point, is that which the plant naturally affects; and this is confirmed by the fact that the plant thrives perfectly well in the open air during the summer months, in gardens in the south of England, but that it will not endure unprotected the severe frosts of winter. Whether the great altitude above the sea-level at which it occurs in Mexico is an indispensable condition for its complete development, is a point on which we have no information.

[The author now suggests Cornwall, Devonshire, the Isle of Wight, Madeira, and some localities in India, as probably suitable for its cultivation, and then continues:]

It must not, however, be supposed that no attempts to cultivate jalap have been made, though it may be safely asserted that none have resulted in obtaining for the market a better supply of the drug. In Mexico, as Schiede relates, the Indians were commencing in 1829 to cultivate the plant in their gardens; and I have been informed by a London druggist that some of the jalap now found in the market is derived from cultivated plants. The late Dr. Royle states that he sent plants obtained from the Royal Horticultural Society and from Dr. Balfour, of Edinburgh, to the Himalayas, where he hoped they would soon be

established.* In 1862 I forwarded to Mr. N. Wilson, Curator of the Botanic Garden at Bath, Jamaica, a jalap plant, of which he wrote to me in October, 1863, that it was growing luxuriantly at an elevation of 2000 feet, and that he had no doubt the plant could be cultivated on the mountains of Jamaica as an article of commerce.

The culture of *Exogonium Purga*, Benth., is also being attempted in the south of France by Prof. Dr. J. E. Planchon, of Montpellier, and by M. Gustave Thuret, of Antibes, but the summer climate of those localities is so much drier than that of the region in which the jalap plant is indigenous, that success is doubtful. Tubers have also been sent to Madeira.

There is one other point in connection with this subject upon which we seem to require information, and that is the age at which the jalap tubers can be collected to most advantage. It is well known that the jalap of commerce consists of tubers of all sizes between those weighing a few grains up to such as weigh several ounces,—and that the larger, and those which are internally most compact, dry, and resinous, are preferred.

The adoption of a better method of drying the tubers than that at present pursued will also deserve attention. It is probable that this object will be accomplished by slicing the tubers while fresh, and drying them with the gentle heat of a stove.—*Lond. Pharm. Jour.*, May, 1867.

ON THE GEOGRAPHICAL RELATIONS OF LAURACEÆ.

By C. F. MEISSNER.

[A paper on the above subject was presented to and published by the Bavarian Academy of Sciences. We extract the following review from the last chapter:]

1. The Lauraceæ contain 972 species, constituting an order of the fifth rank.

* *Manual of Mat. Med. and Therap.*, ed. 1853, p. 553.

In Birdwood's *Catalogue of the Economic Products of the Presidency of Bombay*, Bombay, 1862, it is stated at p. 57, that *Exogonium Purga*, Benth., is "cultivated on account of Government at Hewra." I am, however, assured that there is some error in this statement, and that the plant does not now exist in the Hewra garden.

2. They are distributed over the five continents, having their largest number in America (447 species) and Asia (445 species); then follows Australia with 56, Africa with 25, and Europe with one species.

3. The Eastern Hemisphere possesses 60 species more, but 5 genera less than the Western. The tribes *Litsæaceæ* (256 sp.) and *Perseaceæ* (149 sp.) constitute the bulk of species in the Eastern, and the tribes *Oreodaphneæ* (246 sp.) and *Cryptocaryeæ* (117 sp.) in the Western Hemisphere.

4. All six tribes are represented in America, while the *Oreodaphneæ* are wanting in Asia and Australia, and the *Gyrocarpeæ* in Africa.

5. America contains absolutely and relatively the largest number of genera, namely, 32, of which 23 are peculiar to herself.

6. The Lauraceæ predominate between the tropics, rapidly decrease in number towards the poles, and are completely excluded from the colder temperate, high alpine, arctic and ant-arctic zones. The equatorial zone contains 538, the rest of the tropical zone, 365, the northern outer tropical, 88, and the southern tropical zone, 85 species. Excluding the equatorial zone, the Northern Hemisphere has 282, and the Southern 256 species.

7. The majority of the American species (406) grow on the continent, only 41 on the islands, while in Asia the islands produce 310, (of which only 24 are not tropical,) and the continent only 135.

8. All species are endemic, growing only in one continent, and mostly in one of its floral districts only; the same is the case with most of the genera.

9. The majority of the Lauraceæ appears to grow in hot, low lands, and chiefly in moist situations; next, they inhabit drier hilly parts, the lower mountains and shady mountainous forests of the coasts.

But very few appear to reach up to the true alpine regions; only under the tropics some grow at such heights, the climatic conditions of which approach those of the arctic-alpine regions.

10. In relation to the history of the organic creation, it is to

be observed that the Lauraceæ belong to the oldest forms of plants appearing amongst the earliest dicotyledons, excepting those of the chalk stratum; they have apparently held no unimportant position in the tertiary forests.

The geographical conditions of the Lauraceæ resembles in many points, and to a high degree, those of the Myrtaceæ, which are almost excluded from Europe, and entirely from the arctic-alpine and antarctic regions, but are concentrated in considerable numbers and similar uniformity in the tropical zone of America and Asia, upon the continents and islands, and in outer tropic zones occur more numerous in the Southern than in the Northern Hemisphere, and to a larger extent in Australia than in South Africa. The myrtles, however, differ from the laurels, in attaining more rarely the size of high trees, in appearing more numerous in Australia, and in their genera of the tropics, which occur more frequently in both hemispheres.

The Lauraceæ agree likewise, in several of the above points, with the Araliaceæ, Piperaceæ and Aroidæ, while those families which are more closely allied to them in structure and physiognomy, like the Polygonaceæ, Santalaceæ and Thymelacææ, differ considerably in their geographical relations.—*Abhandl. der k. bayer. Akad. d. Wiss.* II. C. X. Bd. I. Abth.

J. M. M.

ON THE PREPARATIONS OF CONIUM OF THE BRITISH PHARMACOPŒIA, AND THE TINCTURE OF THE LONDON PHARMACOPŒIA.

BY JOHN HARLEY, M. D., LOND., F. L. S.

(Assistant Physician to King's College Hospital, etc.)

(Continued from p. 272.)

In my last communication I gave an account of some experiments with two samples of the *tincture of the dried leaf*. The conclusion to be derived from them clearly coincides with that formed of the tincture of the fruit, viz., that it is practically an inert preparation.

As far as a *spirituous* preparation of the dried leaf is concerned, I think my experiments are conclusive. They entirely accord with my previous experience, which first led me to mistrust the preparation.

Feeling, however, that it is a matter of considerable importance to determine whether the dried plant does retain any active properties, and if so in what degree, I have carefully examined the dried leaves, from a portion of which the tinctures employed in my experiments were prepared. Excepting in the *poultice*, the dried leaf is no longer used in the British Pharmacopœia; but the importance of the investigation will be recognized when it is observed that the dried plant is largely used in some other Pharmacopœias. Looking first to our nearest neighbors, I find that the French Codex contains no less than six preparations of the dried leaf, viz:—1. An alcoholic extract; 2. A plaster made of this extract; 3. An injection, composed of an infusion of the dried leaf; 4. Powder of the dried leaves; 5. An ætherial tincture; and lastly, 6. A tincture.

The Norwegian Pharmacopœia has two preparations of conium. 1. The dried leaf, prescribed as follows:—"medium dose, 2 to 3 grains; 10 grains would be a dangerous dose." 2. An aqueous extract of the dried leaf treated by alcohol, of which it is said:—"medium dose 1 to 2 grains; a dangerous dose, 6 grains."

There is scarcely a Continental Pharmacopœia which does not contain these and similar preparations of conium.

The United States Pharmacopœia contains four preparations of conium, three of which are derived from the dried leaf:—1, an alcoholic extract; 2, a fluid extract; and 3, a tincture corresponding to that of the London Pharmacopœia.

It is to be observed that the dried plant is thus extensively used notwithstanding that some very competent observers have expressed doubts respecting its activity. Geiger indeed expressly states* that the dried leaves of hemlock do not contain any conia, and Pereira says† "no reliance can be placed on the dried leaves, however carefully prepared, for they sometimes yield no conia, though they possess the proper hemlock odor and a fine green color." Of these two statements the latter is nearer the truth, but it implies—what I believe is untrue—that some dried

* *Magazin für Pharmacie*, xxxvi.

† Pereira, *Elem. Materia Medica*, vol. ii. part ii. p. 195.

hemlock leaves do possess the active properties commonly ascribed to them.

The following are my observations upon this point:—

Examination of the dried leaves used in the preparation of the tincture above referred to.

I. February 11, 1867. Took one ounce avoirdupois of each of the two samples of leaves, separated from leaf-stalk and in coarse powder, and packed them in thin layers alternating with layers of fine sand in a percolator. f3x of water containing 120 grains of caustic potash was poured upon them, and maceration allowed for 24 hours. The aqueous solution was then displaced by f3viii of dilute alcohol (equal parts of rectified spirit and water), and maceration allowed for 24 hours more. The spirituous fluid was next displaced by water acidulated with sulphuric acid, and percolation continued as long as the running fluid possessed color. f3xxii of very dark greenish-brown fluid was thus obtained. A little more acid was added to produce exact neutralization of the alkali, and the turbid fluid filtered. Chlorophyl and sulphate of potash, destitute of conia or any of its salts, remained on the filter. The filtrate was evaporated over a water bath at a temperature under °160 F., until about 3v of dark brown extract, of treacly consistence, remained. While still warm, this was rubbed up with f3v of solution of caustic potash (1 part (HO, RO), 3 parts (HO)). A very faint odor of conia was evolved. The mixture was transferred to a long tube, and shaken at intervals with an equal bulk of æther. The æther assumed a yellowish-green color. After 24 hours the ætherial solution was decanted, and the extract washed with fresh portions of æther as long as it continued to dissolve anything. The mixed æthereal solutions were then distilled. Half a grain of a clear, deep sap-green, thick, oily fluid, lighter than water, remained. It possessed a mint-like odor mixed with that of conia. To the tongue it was almost as bitingly acrid as conia itself, but in minute quantity it produced, like oil of peppermint, a cooling sensation. Its taste was bitter, and it possessed, in an intense degree, the nauseous flavor of the dried leaf or its tincture. It was in fact a mixture of conia and the oleo-resin of the plant, colored by chlorophyl. It imparted to water a strong

alkaline reaction. Mixed with water acidulated with sulphuric acid it refused to dissolve, but the aqueous fluid obtained a tinge of color, and, when evaporated nearly to dryness, a dark film of syrupy fluid remained, which, when mixed with a little solution of caustic potash, evolved a distinct odor of conia.

II. An ounce avoirdupois of the mixed leaves were taken and mixed with f3vss of water and f3ss dilute sulphuric acid P. B. Maceration was allowed for seven days at a temperature of 50° F. The fluid was then displaced by water. f3x of bright sherry-colored infusion was thus obtained. This was neutralized exactly by HO, KO, and filtered. A modification of chlorophyl, which gave a deep yellow color with potash, and sulphate of potash, both free from conia or any of its salts, remained on the filter. The filtrate was treated as that of No. 1, and the extract in like manner supersaturated with potash and washed with æther: a little less than half a grain of bright pale greenish-brown oily matter remained. It possessed a powerful odor, compounded of conia and the peculiar odor of the leaves with a minty addition. It smelt more of conia and less of mint than the product described under No. 1. Its taste was intensely biting, like that of conia itself, leaving a flavor of tobacco and peppermint, and the rank taste of the dried leaves. Treated with sulphuric acid the oily fluid partly dissolved, and the filtered solution manifested a purple tinge on evaporation, and furnished a little brown syrupy extract, which, upon the addition of potash, evolved a strong odor of conia, a distinct trace of which was obtained from the mixture by the aid of æther.

It appears from the foregoing experiments that the dried leaves do, when carefully prepared and preserved, retain a trace of conia; and it is equally conclusive that the quantity is much too small to furnish an efficient preparation.

III. In order to make my investigation complete, I subjected the leaf-stalks—primary, secondary, and tertiary—to the same process as that described in No. 1. Taking the same quantity of the leaf-stalks, viz. 3ii, I obtained as nearly as possible the same quantity of oily matter as from the leaves. Its physical and chemical properties were identically the same as those of the oily fluid obtained from the leaves.

It will be observed that I have not followed the usual process (that of distillation) for the extraction of conia in the above experiments. I have been induced to adopt the above method in order to prevent that decomposition of the alkaloid which takes place by prolonged heating with potash. If I had followed the prescribed processes, I should no doubt have been led to the same conclusion as Geiger, viz., that the dried leaves are destitute of conia.

I am now brought to the inquiry, What is the value of the *Cataplasma Conii*, P. B.? According to the most liberal computation it contains only half a grain of conia, and, as far as this principle is concerned, it may therefore be considered valueless. It is stated in Wood and Bache's "Dispensatory of the United States" that two or three drops of conia may be given in the form of enema.

Succus Conii.—I now turn to another preparation of conium, the *Succus Conii*. This is, indeed, a most worthy representative of the famous hemlock, as I have most satisfactorily proved by its effect upon myself and others.

The drug with which I commenced my experiments was prepared by Mr. C. F. Buckle, of 77 Gray's Inn Road. W. C. He has kindly furnished me with the following particulars respecting the herb and the preparation of the juice:—

"June 1, 1866.—Received from Mr. Gaines 56 lbs of *Conium maculatum* grown in Essex. The plants were fresh and fine, and just coming into bloom. The process of pulping between finely-grooved iron rollers was commenced at once; when complete, the pulp was subjected to the pressure of a very powerful hydraulic press, and 75 per cent. of juice obtained. This was immediately mixed with the proportion of spirit prescribed by the British Pharmacopœia, and the mixture set aside in a cellar. The whole of the process occupied ten hours, and was completed in one day. The mixture was subsequently filtered, as directed, and bottled off." The resulting preparation was of a dark sherry-color, possessed a delicate and agreeable herby taste and odor without acidity, and an acid reaction. Sp. g. 1002. f3j yielded 80 grs. of extract, and 0.42 grs. of pure conia. Heated with a little caustic potash, it evolved suffocating fumes of conia. Heat,

alcohol, nitric acid, all precipitated albumen. The boiled and filtered juice gave reactions indicating the presence of sugar (in considerable quantity), soda, magnesia, lime, phosphoric acid (in considerable quantity), sulphuric acid (a minute proportion), chlorine. Bichloride of platinum gave a muddy molecular yellow deposit; tannic acid, a fine flocculent precipitate; perchloride of iron caused a precipitate, but neither the per- nor proto-salts produced any discoloration.

Dec. 10.—At 11.30 A. M. I took f^zii with a little water. I remained quiet, and was engaged in close study all the rest of the day. No effect followed.

Dec. 11.—At 8.30 A. M. took \mathfrak{z} i of bicarbonate of potash in a large draught of water. At 10.30 A. M. took f^ziii of the succus, and went by railway into the City. On walking back again, about three-quarters of an hour after taking the conium, I suddenly felt a heavy clogging sensation in my heels, and as I went along I was satisfied that this was due to impairment of muscular power. After walking about a mile up-hill this sensation was very decided, and on putting a foot upon the scraper at the door of the hospital the other leg felt hardly sufficient to support me. It was a dark foggy day, and I could not test my vision for distant objects with any certainty, but on looking at a blazing fire at the distant end of the ward I felt giddy, and I seemed to want power in my eyes in order to fix my gaze firmly enough to get a good definition. I could not follow the rapidly shifting flames so as to clearly define one from another. I felt clumsy in my movements. I was quite sure of them, but I felt that I needed to make an effort to control my legs. By the time I had finished my visit (1 P. M.) these effects had completely passed off, and I walked away briskly a distance of two miles. The maximum effect was manifest about an hour and a quarter after taking the hemlock.

Dec. 13, At 11 A. M.—Took f^ziii of succus, and experienced the above-mentioned effects in only a very slight degree. The pulse and pupils remained natural. I was pretty actively engaged the hour following the dose.

Dec. 15, At 10.15 A. M.—Took f^ziv and immediately walked a distance of three miles. Felt a repetition of the symptoms which

I experienced on the 11th, after 3iii of the juice. Three hours after taking the drug the symptoms had entirely passed off, and I felt as strong and active as I ever did.

Dec. 17, At 10.45 A. M.—Took f3vss of the succus, having previously observed the pupils and the pulse, and continued moving about in a small room, arranging certain matters. I had forgotten the conium altogether, but was suddenly reminded of it by the occurrence of the following disorder of vision, which would, probably, be loosely called giddiness. It was what I might term voluntary giddiness,—a giddiness within my own control. So long as my eyes were fixed upon a given object, the definition and capacity of vision for the minutest objects were unimpaired; but the instant I directed my eyes to another object, all was haze and confusion, and, if standing, I felt giddy. As soon, however, as the eyes again rested upon an object, the confusion of vision and sense of giddiness instantly disappeared. It was clear to me that the adjusting muscular apparatus of the eye was enfeebled and its contractions so sluggishly performed, that they could no longer keep pace with those of the external muscles of the eye. Three-quarters of an hour after taking the conium this symptom suddenly appeared. At 11.45 (an hour after the dose) it was much increased: a general muscular lethargy affected me; the eyelids became so heavy that it required a considerable effort to raise them, and the implication of the third nerve was still further indicated by widely dilated pupils. I sat down to make these observations, and began to feel so oppressed with rapidly increasing muscular lethargy, that I got up and tried to shake it off.

At 12, noon, I first felt weakness in my legs, and then, as these symptoms were rapidly increasing and my vision was very much puzzled, I felt some alarm; at the same time the earliest beginning of the sensations of squeamishness and faintness, which tobacco produces on those unaccustomed to its use, came on. I sat down again once or twice, but I was afraid of maintaining this posture, for I felt that it would so much encourage the lethargy that it might get the better of me. I therefore walked about and tested the muscular power of my legs. At this time I was cold, pale, and tottering. The pulse, which had been con-

siderably excited by the sudden accession of the foregoing symptoms, was now sixty-eight and quite regular. The sensation of nausea soon passed off, but the diminution of muscular power increased, and I felt that if this continued, my legs would soon be unequal to support me. I could still go up stairs awkwardly, but the legs felt strangely light and powerless. The weakness was especially felt in the hamstring muscles. The mind remained perfectly clear and calm and the brain active, while the body seemed heavy and well-nigh asleep. There was, in fact, a direct diminution of power in all the voluntary muscles, almost amounting to paralysis; and of all the motor-nerves, the third was the earliest and most deeply implicated. The greatest exertion was at one time required to elevate the eyelids.

At 1.30 P. M.: pulse fifty-six; beginning to feel warmer; pupils less dilated; the heaviness of the eyelids and the voluntary giddiness diminishing; muscular power returning.

At 2.30 P. M.: all the symptoms had passed off. As in previous experiments, I totally abstained from all kinds of stimulants during the action of the medicine. At this time the urine was alkaline, from the effects of a dose of potash taken at 8.30 A. M. After luncheon I wrote letters till 4 P. M. and then walked briskly a distance of three miles. I abstained from stimulants all day, and finished the day's work by drawing a microscopic object.

A *second sample* of the Succus was obligingly sent to me by Messrs. Allen and Hanburys. Its sp. g. was 1015, the greater density being chiefly, if not altogether, due to the larger proportion of albumen and sugar. In all other respects the Succus corresponded with that already described.

Dec. 24.—N. P., a young woman of average health and strength, took f3j. Excepting a slight feeling of nausea, no effect followed.

Dec. 28.—She took f3j and ℥xl of the Succus. No effect followed.

Dec. 28.—She took f3iij. Within half an hour she became giddy and tottering. The muscular weakness increased, and during the next half-hour she was hardly able to walk. At the end of an hour the symptoms began to subside, and two hours

and a half after taking the dose they had wholly passed off, leaving her in her usual health.

A *third sample* was kindly forwarded to me by Messrs J. Bell and Co. The sp. g. of this preparation was intermediate between that of the first and second samples, viz. 1005. It contained less albumen than either. In all other respects it agreed with the other samples, and furnished the reactions above mentioned. It was prepared June 3, 1863.

Dec. 28.—N. D., a rather delicately-constituted young woman, took fʒij of this Succus. No efforts followed, but she vomited an hour afterwards. This was probably due to other causes.

Dec. 29.—Took fʒiv. About twenty minutes afterwards she experienced nausea, and became giddy and unable to walk. An hour after taking the dose there was nearly complete muscular paralysis, the eyelids were closed, and the pupils widely dilated. The mind was perfectly calm, clear, and active, and she tried without success to raise her eyelids when I requested her to do so; the pulse and respiration were normal. The former had been accelerated at the outset of the symptoms. The surface was warm. The maximum effect was produced about an hour after taking the medicine. She remained in the state above described about three-quarters of an hour. The symptoms then subsided almost as rapidly as they came on, and three hours after taking the dose she was able to walk about as actively as ever, and attend to her duties. Next day, she complained of a slight pain in the legs.

From the above investigations, it is conclusive that the Succus of the British Pharmacopœia possesses in an eminent degree the poisonous properties of the hemlock. The experiments with the third sample are peculiarly valuable, as they show that the preparation undergoes no change by keeping. Having thus distinguished the *Succus* from the inert tinctures, I trust that these will henceforth be excluded from the Pharmacopœias, and that medical practitioners will rely solely upon the Succus, which, in the compactness of the dose required, in absence of any objectionable taste and odor, and in the potency and certainty of its operation, leaves nothing to be desired.

As a substitute for the *Cataplasma Conii*, P. B., a piece of

lint saturated with the *Succus*, or, if heat and moisture be required, a bran poultice containing an ounce or an ounce and a half of the *Succus*, may be used.—*London Pharm. Journ.*, April, 1867.

78, Upper Berkley Street, W.

(To be continued.)

“STYPTIC COLLOID.” A NEW STYPTIC AND ADHESIVE FLUID.

BY BENJAMIN W. RICHARDSON, M. A., M. D., F. R. C. P.

(Senior Physician to the Royal Infirmary for Diseases of the Chest.)

[The lecturer states that he experimented with the view of improving upon Pagliari's styptic, a formula for which is given in the U. S. Dispensatory, 12th Edit., page 166. From his statements, most of which are chiefly interesting to surgeons only, we extract merely those of value to the pharmacist, prefacing that by *absolute* alcohol and *absolute* ether in the following formula, stronger alcohol and stronger ether of the pharmacopœia are undoubtedly meant.]

“The process of manufacture of the fluid is tedious, but sufficiently easy. The object to be aimed at is to saturate ether entirely with tannin and a collodial substance, xyloidine or gun-cotton. In the first step of the process, the tannin, rendered as pure as it can be, is treated with absolute alcohol, and is made to digest in the alcohol for several days. Then the ether, also absolute, is added until the whole of the thick alcoholic mixture is rendered quite fluid. Next the collodial substance is put in until it ceases readily to dissolve. For the sake of its very agreeable odor, a little tincture of benzoin is finally admixed.

“The solution is now ready for use. It can be applied directly with a brush, or, mixed with equal quantities of ether, it can be applied in the form of a spray. In order to give to the fluid a short name by which it may be known, I have called it ‘*styptic colloid*.’

“*Properties*. When the solution is brought into contact with an open surface of the body, the resultant phenomena are these: the heat of the body gradually volatilizes the ether and alcohol, and the tannin and cotton, as the ether leaves them, are

thus left stranded on the surface in intimate combination. In proportion as the ether passes off, the blood or the secretion of the surface permeate the tannin and cotton; but tannin acts directly upon albumen, coagulating it, and transforming it into a kind of membrane, almost like leather. The cotton meanwhile unites the whole, gives substance to the mass, and adhesive quality. When all is solidified, the dressing becomes, in fact, a concrete, having a true organic hold or basis on the tissue; and as the tannin, if the solution be freely applied, is in excess, any new exudative matter or blood is for several hours taken up by it, and the annealing is made the more complete.

“Thus by this dressing, the air is excluded from every possible point in every possible direction, not by a mere septum, but by the combination of the animal fluids with the remedy; and because the air is excluded and fluid is absorbed there is no decomposition—*i. e.* no oxidation; and because there is no oxidation there is no irritation.

“The styptic and adhesive qualities of this fluid are easily demonstrated by observing its direct action on blood, on serum, on pus, on albumen. You will see that it solidifies all these by mere contact with them.

“To these properties I must also add that of complete deodorization. Here is putrid blood, here putrid ovarian serum, here putrid purulent substance. They are unapproachable when laid on an open surface, but we bring them into contact with the solution, and they are deodorized. Further, the decomposed substance is fixed by the tannin and rendered inert.—*Med. Times and Gaz.—Dental Cosmos, June, 1867.*

PRESERVATION OF SULPHURETTED HYDROGEN SOLUTION IN THE LABORATORY.

At the last meeting of the Pharmaceutical Society of Paris, M. Lepage, of Gisors, brought forward a process which he has adopted for preserving solutions of sulphuretted hydrogen. All chemists know that this useful reagent cannot be preserved long in aqueous solution. The author has adopted for some years an artifice which enables sulphuretted hydrogen solution to be kept for twelve or fifteen months with scarcely any loss

of strength. Instead of using water, he saturates a mixture of equal parts of pure glycerin and water with sulphuretted hydrogen gas, and uses it in the ordinary manner. None of the reactions are interfered with in the least, whilst the solution possesses almost perfect stability. The dilute glycerin dissolves less gas than distilled water will; representing the solubility in the latter liquid by 100, that in the former will be 60.

Glycerin likewise prevents solution of sulphide of ammonium from becoming colored, and M. Lepage believes that it has a similar action on the sulphides of potassium and sodium.—*The Chemical News*, May, 1867.

DRILLING GLASS.

To the Editor of the *Chemical News*.

SIR,—In the *Chemical News* of April 19 there is a description, by Mr. Spencer, of the old and well-known method for drilling glass by means of a file wetted with oil of turpentine. Some years ago I read in a German periodical of another means for the same purpose—viz., dilute sulphuric acid—and I found it, on trial, to answer much better than the first. Not only, it appears, is the efficacy of the cutting tool more increased by sulphuric acid than by oil of turpentine, but also, strange as it seems, the tools (files, drills, &c.) are far less rapidly destroyed by being used with the acid than with the oil. I also found it stated that, in the engineering establishment of Mr. Pintus, at Berlin, glass castings for pump barrels, &c., were drilled, planed, and bored just like iron ones, and in the same lathes and machines, by the aid of sulphuric acid. As to drilling, I can fully testify to the efficacy of that method. Whenever I want, say, a hole in the side of a bottle, I send it, along with some dilute (1 : 5) sulphuric acid, to the blacksmith, who drills in it, with a hand brace, a hole of $\frac{1}{4}$ inch diameter. This hole is then widened to the required size by means of a triangular or round file, again wetted with the acid. I also find a great help in the latter when making graduations on litre flasks, &c. There is hardly any smell perceptible during the work, which proves how little the acid acts upon the tools, undoubtedly owing to their

being tempered; but each time after use I take the precaution to wash and dry the files at once, and I have so far observed no sensible deterioration in them. Hoping this little hint, may be useful to some of your readers, as it has been to me,

I am, &c.

G. LUNGE, Ph. D.

South Shields, April, 1867.

The Chemical News, May, 1867.

Varities.

Writing and Copying Ink.—Dissolve $\frac{1}{2}$ oz. of ext. logwood in half a bottle (?) wood vinegar, filter, and add half a bottle distilled water. The steel pens furnish the iron requisite for the black-bluish color.—*Archiv d. Pharm.* 1867, Jan., 56.

Violet Ink.—Two drachms extract of logwood are dissolved in half a bottle wine vinegar, filtered, diluted as before, and twenty grains acetate of manganium added.—*Ibid.*

Red Sealing Wax.—No. 1. Shellac, Venice turpentine, Chinese vermilion, of each eight ounces, benzoin two ounces, white bole or marble dust two ounces, one drachm oil of lemon.

No. 2. Shellac, Venice turpentine, of each three ounces, vermilion, red bole, of each four ounces, benzoin two ounces, oil of lemon one drachm.

No. 3. Shellac, Venice turpentine, of each eight ounces, vermilion, talc, of each four ounces, dragon's blood, benzoin, each one ounce.

Extra fine. Dammar, bleached shellac, vermilion, of each twelve ounces, Venice turpentine four ounces, oil of lemon one drachm.

Common. Dammar, rosin, of each eight ounces, turpentine, red lead, chrome red, of each four ounces.—*Ibid.*

Jockey Club.—Essence de violet, de jasmin, aa thirty p., vanilla one-half part, oil of patchouly one-fourth part, otto of rose one part, in thirty parts alcohol.

Spring Flowers.—Ambergris one-eighth part, twenty tincture of orris root, one-half oil of bergamot, one-eighth part otto of rose, in three parts alcohol.—*N. Jahrb. f. Pharm.*, 1866.

Judkins' Ointment.—Mr. J. B. Baxley, of Baltimore, sends the following

recipe for the preparation of a nostrum which was formerly protected by letters patent, and which in some parts of the country is still much used. The formula was obtained from the Patent Office.

Take of linseed oil,	1bj.,
red lead,	℥iv.,
spirits turpentine,	℥ss.,
sugar of lead,	℥j.

The oil is first boiled in an earthen pot, after which the red lead is gradually added; finally, the other ingredients.

Bon de Rabais.—Hager's Pharmaceutische Centralhalle, 1866, No. 38, states: *L'Étincelle* is a daily paper published in Paris, containing, besides a novel, stale anecdotes; price of each number five centimes. Not paying any stamp tax, it is not authorized to accept advertisements; but it aims to increase its sale in a reprehensible way totally unknown here. Each number contains at the end a list of bakers, butchers, liquor-dealers, grocers and pharmaciens who sell *L'Étincelle*; attached to this list are five bonds, one for each avocation. The bond for the apothecary reads thus:

Journal	(Juillet)	Valable
L'ÉTINCELLE		de 23 au 24.

Pharmacie.

BON DE RABAIS.

Toute personne qui présentera avec le présent Bon chez l'un des adhérents cicontre désignés, aura droit à un rabais de 15 p. c. sur toute ses achats.

MASSON,
Directeur.

The list comprises twenty-nine pharmacial establishments in Paris.

This "beats" the gift lotteries, for patriotic and other purposes, of our country.

Paris Exhibition.—The following is a list of jurors and associates appointed for the various classes in which our readers are likely to take most interest: Class 7. Paper stationery, binding, painting and drawing materials; juror, Mr. Warren De la Rue, F.R.S.; associate juror, Mr. F. Hankey. Class 9. Photographic proofs and apparatus; juror, Dr. Hugh W. Diamond; associate juror, Lieutenant Colonel Gordon, C.B., R.E. Class 11. Medical and surgical instruments and apparatus; juror, Sir J. F. Olliffe, M.D. Class 12. Mathematical instruments and apparatus for teaching science; juror, Mr. C. Brooke, M.A., F.R.S.; associate juror, Lieut. Col. Strange, F.R.S., F.R.A.S. Class 24. Apparatus and processes for heating and lighting; juror, Prof. J. Tyndall, LL.D., F.R.S.; associate juror, Rear Admiral Ryder, C.B., R.N. Class 25. Perfumery; juror, Dr. W. Odling. Class 36. Jewelry and precious stones; juror, Earl Dudley; associate juror, Mr. N. H. M. S. Maskelyne. Class 40. Mining and metallurgy; juror, Mr. S. H. Blackwell; associate juror,

Capt. W. S. Roden. Class 41. Products of the cultivation of forests, and of the trades appertaining thereto; juror, Hon. F. D. M'Gee; associate juror, Mr. P. L. Simmonds. Class 43. Agricultural products (not used as food) easily preserved; juror, Mr. D. Hanbury; associate juror, Dr. T. Thomson, F.R.S. Class 44. Chemical and pharmaceutical products; juror, Dr. Frankland, F.R.S.; associate juror, Dr. David Price. Class 45. Specimens of the chemical processes for bleaching, dyeing, printing and dressing; juror, Sir Robert Kane, F.R.S.; associate juror, Dr. David Price. Class 47. Apparatus and processes of the art of mining and metallurgy; juror, Mr. W. W. Smyth, M.A., F.R.S., Pres. G.S.; associate juror, Mr. C. Le Neve Foster. Class 51. Apparatus used in chemistry, pharmacy, and in tan yards; juror, Dr. Lyon Playfair, C.B., F.R.S.; associate juror, Prof. T. C. Archer. Class 59. Apparatus and processes used in paper making, dyeing and printing; juror, Mr. Wyndham S. Portal. Class 64. Telegraphic apparatus and processes; juror, Mr. C. Wheatstone, F.R.S.; associate juror, Lord Sackville Cecil. Class 67. Cereals and other eatable farinaceous products, and the products derived from them; juror, Mr. J. Druce; associate juror, Mr. C. Woolloton. Class 72. Condiments and stimulants; sugar and confectionery; juror, Mr. G. Moffatt, M.P. Class 73. Fermented drinks; juror, Hon. H. G. Howard; associate juror, Mr. E. L. Beckwith.—*Chem. News, London*, April 5, 1867.

The Pithiest Case on record. Before the Supreme Court of Ohio. Elijah Patrick vs. Wm. S. Merrill & Co.—This is a case involving more pith, without doubt, than any case ever reported. In fact, it is founded on nearly one ton of the article, and at the same time exhibits one of the strangest blunders ever made.

The suit is brought to recover some \$5,400 for 1600 pounds of sassafras pith, which the plaintiff alleges he contracted to deliver, and did deliver, to defendants in December last, at \$3.50 per pound.

The defendants deny any contract whatever, but admit that they agreed to buy certain articles in the way of barks, roots and herbs, and gave Mr. Patrick a list of the articles they would buy.

The plaintiff's testimony elicited rounds of laughter, which were not frowned upon either by the Court. The ludicrousness of the matter appears when it is known that the utmost possible demand for such an article by the defendants, who are wholesale druggists, is about ten pounds a year, at which rate it would require one hundred and sixty years to consume the amount.

The plaintiff says he stopped to see Merrill, who was an old friend, and asked him if he wanted any barks or herbs. The old man was not in, but the son was. He continued:

Merrill got a paper with a list of various articles named on it, and said that he would mark certain articles which he wanted, and set the price

opposite. Such articles as he wished to limit as to quantity, he would put the amount. The time agreed to bring it in was about the first of December, when ginseng was brought into market. When we came to sassafras bark, the witness said, he limited me to five thousand pounds, and marked the price thirteen cents per pound.

The next article was sassafras pith; in this article he didn't limit me as to quantity, but put down the price at \$3.50 per pound. I remarked that I never knew of its being used. He said it was a good thing, and very scarce. I told him I would get all I could for him, and he didn't limit me as to the amount, but told me to get what I could. At the same time I requested that he would give me the exclusive right in that part of the State. This he agreed to.

I went home and told all my clerks to make proposals to the people for sassafras pith; and on three proposals the pith began to come in, and long before the time, I had collected between 1700 and 1800 pounds of the article, and I have \$400 or \$500 worth at home now.

He brought it down the Big Sandy and the Ohio to Cincinnati, in two or three flatboats, and notified Merrill of its arrival.

Q. Did Merrill send for it?

A. Yes; he sent down his drays and had it hauled up and piled before the door of his drug store.

Q. Was there a pretty good pile of it?

A. I should think there was a pile about as big as this room before the door. [Laughter.] I told Mr. Merrill I had more at home, and asked if I should send it.

Q. What did he say to that?

A. He said, yes, send it on, all except the *pith*. He thought he had enough *pith*. [Laughter.]

Q. Did he pay you for the pile?

A. No. When I called to get my money he refused to pay for the pith, but was willing to pay for the other articles.

The younger Mr. Merrill testified that he did not consider the paper a contract, and so told Mr. Patrick at the time. He said he told him they only wanted a little of the pith.

Wm. S. Merrill was sworn, and testified that his son told him that Mr. Patrick had reached the city with an unheard of quantity of sassafras pith; more than could be sold in all time. As an illustration, the witness said, some years ago, he had engaged with a man in South Carolina to send him five pounds of sassafras pith, for which he would pay \$2 50 per pound. Instead of five, the man shipped fifty pounds; he paid him for five pounds, and wrote to him that he would keep it in store until he could dispose of it; if he could not sell it by wholesale, he would take out five pounds as he needed it, and pay for that amount as it was taken out of the barrel. It requires many years to get through the fifty pounds in this way.

Judge Storer asked Mr. Merrill how much he thought might be sold by his house during a year. He asked this question in view of a calculation he was making.

Witness answered, "Probably as much as ten pounds; that would be a high estimate."

The Judge said by a careful calculation he found it would take one hundred and sixty years to dispose of the pith.

The case was taken under advisement.

[It was called up again on the 20th of June, but not concluded.]

An Important Discovery.—The *Pall Mall Gazette* has the following announcement: "A discovery, of at least a vital importance for Egyptology as the celebrated Rosetta stone itself, was made about three weeks ago by a party of four German explorers—Reinisch, Rosler, Lepsius, and Weidenbach—at a place called Sane, the whilom Tanis, the principal scene of Rameses II.'s enormous architectural undertakings. A stone with Greek characters upon it was found protruding from the ground, and when fully excavated proved to contain a bilingual inscription in no less than thirty-seven lines of hieroglyphics and seventy-six lines of Greek, in the most perfect state of preservation, and dating from the time of the Ptolemy, Euergetes I., in 238 B C. The stone measures two metres twenty two centimetres in length, and seventy-eight centimetres in width, and is completely covered by the inscriptions. Their first attempts at editing this important inscription having failed, the travellers returned to the spot, and during a stay of two days, the 22d and 23d of April, copied the inscription most carefully, and photographed it three times. The next post will bring particulars as to the contents, and copies of the documents itself."—*Drug. Cir. & Chem. Gaz.*, Sept. 1866.

Glycerin in the Arts.—A German chemist named Pusher, a native of Nuremberg, reported to the Trades Union of that place, that he met with great success in using glycerin together with glue. While generally, after the drying of glue, the thing to which it is applied is liable to break, tear, or spring off, if a quantity of glycerin, equal to a quarter of the quantity of glue, be mixed with it, that defect will entirely disappear. Pusher also made use of this glue as lining for leather, for making globe frames, and for smoothing parchment and chalk paper. He also used it for polishing, mixing wax with the glycerin, and using it as an underground for laying on aniline red color. The red was found to exceed all others in which glycerin is not used. The glycerin has also some properties in common with India rubber, for it will blot out pencil marks from paper, so as to leave no mark whatever.

A paste made of starch, glycerin, and gypsum will maintain its plasticity and adhesiveness longer than any other known cement, and does therefore recommend itself for cementing chemical instruments, and apparatus used by pharmacists.—*Journal of Applied Chemistry*.

NOTICE.

American Pharmaceutical Association.

Notice is hereby given, that the Fifteenth Annual Meeting of the American Pharmaceutical Association will be held in New York city, commencing at 3 o'clock, P. M., on the second Tuesday in September (10th), 1867.

- A suitable room has been secured by the local secretary, in the University Buildings, on University Place, corner of Waverly Place.

Aside from the importance of the reports to be submitted, it may be of interest to the Association to know that several of our members, now abroad, will act as delegates of the Association to the International Congress of Pharmacutists at Paris, August 21, and will return in time to be present at the session in New York.

A cordial invitation is extended to all engaged in trade or manufactures connected with pharmacy, to send specimens of their stock or products for exhibition during the session.

These may be sent to P. W. Bedford, Secretary of the American Pharmaceutical Association, University Buildings, New York city, notifications to that effect being addressed to him in advance, by mail, to 709 Sixth Avenue,

FREDERICK STEARNS,

President of the American Pharmaceutical Association.

Detroit, May 15, 1867.

Editorial Department.

PROFESSIONAL EDUCATION.—The delegates of most medical colleges of the country met on the third day of May, at the city of Cincinnati, and, after mature deliberation, passed a series of resolutions with regard to the professional education of medical students, of which we give merely the following outlines :

1. Every applicant for matriculation must prove, either by a satisfactory certificate or by a direct examination, that he possesses a thorough knowledge of the common English branches of education, including the first series of mathematics, and sufficient knowledge of Latin and Greek to understand the technical terms of the profession.

2. The student is required to study four full years, and to attend three regular courses of College instruction.

3. The minimum duration of an annual lecture term is six calendar months.

4. Every medical college should embrace in its curriculum at least thirteen professorships, to be taught by not less than nine professors. These branches are to be divided into three groups or series, named the freshmen, junior, and senior series. The student is required to attend these successively, one each year; he will have to submit to an examination at the end of each term, and is not permitted to attend the next series until he has become proficient in the previous ones.

5. At the close of each session, the student is to receive a certificate specifying the time and the courses of instruction actually attended.

6. The definite action of the medical colleges on these propositions is solicited.

The action of this Convention was emphatically approved by the American Medical Association.

Restricting the professional student to an attendance upon certain branches, and progressing with the same in accordance with the knowledge actually acquired, is a step in the right direction, and one which deserves to be followed by every professional college. M.

SUMMER COURSES.—We believe that it is only at St. Louis and Philadelphia where, during the spring and summer, lectures are now delivered in conformity with the requirements of the respective Colleges of Pharmacy. In both cities botany is taught during the season most propitious for a practical study of this science. Our friend Prof. Mayer, of the New York College of Pharmacy, gives similar instruction there. We believe that it would be productive of good if that College would likewise *recognize* the importance of the same, notwithstanding, perhaps, the time may not have arrived yet when a knowledge of botany will be considered as imperatively requisite for graduation.

Since the beginning of April, Prof. Maisch has been delivering lectures on General and Special Morphology, Organology, and Systematic Botany, practically illustrated by excursions into the surrounding country. The average attendance is about eighteen, but very few of the graduates of the College participating. It is not improbable that this meagre attendance, out of a class of about one hundred and sixty last winter, is partly caused by the impossibility of the young men to be absent from the business during an afternoon; but we feel convinced that a spirit of greater liberality would prevail among the employers if they fully understood the importance of botany to the practical pharmacist, and if the young men themselves fully realized the advantages which may be derived from a familiarity with this discipline.

It behooves us, in this connection, to notice the endeavor of the New York College to have the lectures during the coming winter delivered in the day-time. The advantages gained thereby for the instructor and the instructed are obvious, if we merely take into consideration the importance of recognizing *colors* in preparations and experiments. May they meet

with the success which, in our estimation, the movement fully deserves, and may pharmacutists realize the fact that, with the rapid progress made in the pharmaceutical education of our country, the time is fast approaching when extended facilities for studying, and an extension of time, may be necessary to keep American pharmacy on a level with the progress made in all departments of science.

THE MASSACHUSETTS COLLEGE OF PHARMACY.—At the annual meeting of the College, held in Boston on Monday, the 4th ult., the following list of officers was chosen for the ensuing year:

Thomas Hollis, President; Charles A. Tufts and S. M. Colcord, Vice-Presidents; Henry W. Lincoln, Recording Secretary; Geo. F. H. Markoe, Corresponding Secretary; Ashel Boyden, Treasurer; Elijah Smalley, Auditor; D. Henchman, J. S. Melvin, A. P. Melzar, G. D. Ricker, J. A. Gleeson, A. G. Wilbur, John Butterworth, and Edward H. Perry, Trustees.

The death of Mr. Thos. Farrington, a venerable and useful member, was noticed by a series of appropriate resolutions.

Since the meeting took place, we have been informed that arrangements are being made for the delivery of lectures in two or three of the branches most essential for a sound pharmacial education. We hail this undertaking with delight, and feel assured that ultimate success will not be wanting. The gentlemen whose names have been mentioned in connection with the lectures are energetic and enthusiastic in the cause of pharmacy; let them not be deterred from the good work, if, in the beginning, the results should not quite come up to their expectations. Boston, with the cities immediately adjoining her, should certainly be a field large enough to sustain a College of Pharmacy, even if she was to receive but a meagre support from other parts of New England. In order to raise pharmacy to the position which ought to be occupied by her, a thorough scientific and practical education is indispensably requisite. With the multiplication of the Colleges, and their establishment upon a firm basis, the young follower of pharmacy will soon be without a valid excuse for non-attendance of lectures, and for not procuring the highest title at present in the gift of our Colleges,—that of *Graduate in Pharmacy*. M.

DONATIONS TO COLLEGES OF PHARMACY.—With a commendable spirit of enterprise, the Chicago College of Pharmacy seem to be determined to use every effort to succeed in their undertaking. In a circular issued in April they say:

"The College of Pharmacy of this city is now endeavoring to supply itself with a complete cabinet of specimens of Drugs, Chemicals and Pharmaceutical Preparations; also, one of Mineralogy and Natural History, with a suitable Library and the necessary Chemical Apparatus to establish the College as a permanent educational institution, where the young men of the West may obtain a thorough knowledge of the art of

Pharmacy,—so important to the druggist, the physician, and the public.

* * We want specimens in materia medica, botany, chemistry, mineralogy, books and chemical apparatus. One or many will be thankfully received, and promptly acknowledged. Duplicates will do no harm, and may be very useful.

Similar wants are probably felt, more or less, by every College of Pharmacy. Keeping in view the tendency of modern medicine to simplicity of remedies and preparations, the discarding of old and the introduction of new remedial agents, cabinets of materia medica and of pharmaceutical preparations may perhaps never be considered as complete. A cabinet of chemical apparatus is very desirable, but of equal, if not greater importance, is a cabinet of pharmaceutical apparatus and utensils. The appeal of the Chicago College to the friends of pharmaceutical education would probably be endorsed by all her sister institutions. M.

THE NEW MEDICAL LAW OF MARYLAND.—The General Assembly of Maryland passed in January, 1867, an act for the protection of the public against medical imposters, and for the suppression of the crime of unlawful abortion. It creates "the Medical Faculty of the State of Maryland," which consists of all physicians in Maryland who are *bona fide* graduates of some respectable Medical College, and have been licensed by the Board of Examiners established by this Act. While it does not recognize any particular school, the law peremptorily requires a good medical education before any one is allowed to practise medicine; and in consequence thereof the self-styled doctors will hereafter find Maryland a rather unprofitable locality for their wondrous cures, if the law is faithfully carried out. We hope that our pharmacial friends in Maryland will not allow the subject to rest here, but endeavor to increase the safeguards to the public, and to protect themselves by the passage of a similar law relating to pharmacists.

The present law does not affect the true pharmacist; it strikes, however, a heavy blow at the venders of such delectable nostrums as golden pills, &c., by the following:

Sec. 16. And be it enacted, That any person who shall knowingly advertise, print, publish, distribute or circulate, or knowingly cause to be advertised, printed, published, distributed or circulated, any pamphlet, printed paper, book, newspaper notice, advertisement or reference containing words or language, giving or conveying any notice, hint or reference to any person, or to the name of any person, real or fictitious, from whom, or to any place, house, shop or office, where any poison, drug, mixture, preparation, medicine or noxious thing, or any instrument or means whatever, or any advice, direction, information or knowledge may be obtained for the purpose of causing the miscarriage or abortion of any woman pregnant with child, shall be punished by imprisonment* in the penitentiary at hard labor, for not less than three years, or by a fine of not less than five hundred nor more than one thousand dollars, or both, in the discretion of the Court, and in case of fine being imposed, one-half shall go to the informer.

The General Assembly of the State of Rhode Island passed about the

same time an Act for preventing criminal abortion, which contains in Section 3d the same clauses, and almost in the same words.

May the laws enacted by those two States not be allowed to become dead letters on the respective statute books, and may all the other States of our Union adopt, without unnecessary delay, similar stringent measures for the protection of the public and the prevention of crime! M.

MISTAKES.—Several mistakes which have been made within a few months past, by apothecaries in different parts of the country, have become public through the medical journals. None is as painful as the one which occurred about the middle of May, in Brooklyn, N. Y. According to the Brooklyn Eagle of May 17th, P. A. Schwartz, a clerk in a store on Atlantic street, was requested to copy the following prescription, which had been previously put up at this store:

R. Quinæ sulph. ʒss.
Ext. Nuc. Vom., gr. i.
M. ft pil. No. xv.

Dose: one pill every two hours.

He wrote for Quin. Sulph. ʒss., Ext. Nuc. Vom. ʒj., &c., and this prescription was put up by Richard Somers at a store in Montague St. The patient, a lady, took one pill, and died in the course of a few hours. It is unnecessary to make any comment on such gross carelessness; but is it not time that pharmacists, as well as the public at large, should wake up to the necessity of requiring the strict education of every dispenser of medicine? The educated pharmacist *must* know that 4 grains of ext. of nux vom. of our pharmacopœia is a poisonous dose, and that he has no right to put it up without previously consulting the prescriber.

The victim is dead, and the daily press has had food for some editorials on the incapability of drug clerks, without suggesting the only practical remedy of such crying evils,—namely, a sound professional education.

Recently, after the explosion of a steam boiler in this city, involving the loss of over thirty human beings, and in consequence of this fearful slaughter, much virtuous indignation was expressed by the newspapers regarding the employment of incompetent engineers, and it was urged that a law be passed by the Legislature forbidding the employment of any one as engineer unless he has passed a stringent examination before a Board appointed for that purpose. We do not wish to discuss the merits of such a proposition, but merely desire to ask whether, in city and country, the lives of thousands of persons are not, every day, virtually in the hands of ignorant pretenders, who, without sufficient education, assume to prescribe and dispense medicines, of the power of which they have merely some indistinct idea? and is a catastrophe excusable because, in its very nature, it cannot assume such gigantic proportions as the explosion referred to before; while, on the other hand, the wrongs of omission and commission may be of more frequent occurrence?

The agitation for medical reform is progressing; Maryland has taken

one step in the proper direction. Let physicians and pharmacists unite their efforts, that the public be protected in their lives, by requiring the least that can be expected of prescribers and dispensers of medicine, who daily hold the lives of the invalids in their hands: namely, a *sufficient education*. M.

Third Annual Report of the Alumni Association of the Philadelphia College of Pharmacy. Philada., 1867.

The meeting of this Association took place on the 14th and 15th of March. During the sessions, twenty-four gentlemen were elected members. The election of officers resulted in the choice of Mr. Thomas S. Wiegand, President, Chas. L. Eberle and Ferris Bringham, Vice-Presidents, William C. Bakes, Recording Secretary, Adolph W. Miller, Corresponding Secretary, S. Mason McCollin, Treasurer, and an Executive Board consisting of Messrs. Henry Bower, W. Walter Mullen, T. M. Newbold, Jos. P. Bolton, Milton Huber, James Buckman.

We regret that the expectations in regard to the fund for the establishment of a practical department in connection with the College, have not yet been realized. Subscriptions amounting to \$3990 have been received, leaving a balance of over \$6000 to be raised to increase the amount to the proposed sum of \$10,000. We hope that all interested in the welfare of the College will feel a pride to contribute; for to keep pace with the rapid progress of pharmacial science, a laboratory is absolutely necessary, and we think the time not far distant when a botanical garden will be needed for the use of the students in acquiring a practical knowledge of living medicinal plants. We endorse Mr. Bakes' appeal: "Will the graduates lend a helping hand to place our time-honored institution in a position of increased usefulness?" M.

PROCEEDINGS OF THE MASSACHUSETTS COLLEGE OF PHARMACY, &c.—During the agitation in the State of Massachusetts last winter, for the enactment of a license law for the sale of spirituous liquors, the Massachusetts College of Pharmacy decided not to sign, as a College, a petition for or against such a law; the committee of the College, however, drew up the following petition:

To the Honorable the Senate and House of Representatives of Massachusetts in General Court assembled:

The undersigned, officers and trustees of the Massachusetts College of Pharmacy, an institution acting under a charter from the State of Massachusetts for the purpose of promoting the best interests of legitimate pharmacy, and all of us actively engaged as dispensing apothecaries, respectfully represent, that alcohol, wines and other liquors are official articles in the pharmacopœias of all countries, and without which no apothecary could pursue his business; that the use and sale of these articles in the composition of medicine, and for medicinal purposes, constitute a large item in our business; that it is not our practice nor desire in any way to sell them to be used for purposes of mere luxury, or to allow them to be drank on the premises, but on the contrary we desire that the business of apothecaries should be so conducted as not to con'ound it with

that of common retailers of drink ; that as a profession, we ask only to be protected as legitimate pharmacutists in the transaction of our necessary and appropriate business ; that under the present statutes it is impossible for us to conduct our business and perform our duties to the medical profession and the sick.

Now, therefore, in view of the above statement of facts, we most respectfully petition your Honorable bodies to alter the present law in such a way that apothecaries may be able to conduct their business in a legal manner.

At the special hearing of the witnesses of the College before the Committee of the Legislature, Mr. Colcord presented a memorial, setting forth with great force "the apothecaries' views of this great question of the use and sale of wines and spirits for medicinal, chemical, mechanical and manufacturing purposes," and containing the substance of the testimony to be given by them.

We regret that our limited space will not permit us to give even an outline of this memorial, or the able argument of Mr. Colcord, nor of the testimony produced ; we must content ourselves with extracting from the evidence a few cases, showing to what injustice our brethren in Massachusetts were subjected through a spirit of persecution, under the prohibitory law of that State :

Hon. John A. Andrew stated that Mr. Royal Whiton, of Hingham, an apothecary and a strong temperance man, had been prosecuted and fined for selling spirits of camphor.

Mr. Wm. T. Rand, of Dedham, was prosecuted and fined for selling liquor on the prescription of a physician, to deliver which he had got out of bed at midnight ; and he relinquished the business so as not to violate the laws of the Commonwealth.

Charles C. Bixby, an apothecary in North Bridgewater for the past fifteen years, said that he did not think he could do justice to his business and to the community without selling wines and spirits. He had sold California wines, and after a year or two he was notified by the officers to discontinue their sale, which he did. Soon after he was warned to appear before a Justice for selling liquor in violation of law, and one man testified to having bought a bottle of whiskey from him for medicinal purposes, nearly a year ago, and he had heard lately that it had not been half used up ; and another man came to him, after having been to the town agent for some wine ordered by a physician, and, being unable to obtain it from the agent, he sold it to him ; and another testified to having bought alcohol to burn in a lamp—and upon this testimony he was convicted and fined fifty dollars and costs as a "common seller." The wine which he sold was for a lady dangerously sick, and who died two days after.

We conclude our report on this subject—at once interesting and of vital importance—with Mr. Colcord's eloquent remarks, which apply with equal force to the United States Internal Revenue Law, by virtue of which pharmacists are allowed to sell fermented liquors *only* on physicians' prescriptions :—"*If I know the sentiments of our profession, all reliable pharmacutists will place themselves unmistakably upon the side of law and order, whatever may be the consequences to the medical profession and the community.*"

M.

An inquiry into the origin of modern Anæsthesia. By the Hon. Truman Smith. Hartford, Brown & Gross.

The author has been very active in presenting the claims of the late Dr. Horace Wells to the honor of the discovery of anæsthesia, before a committee of the U. S. Senate in 1852. The present work is made up chiefly from a series of communications to the Medical and Surgical Reporter. The author has been very earnest in his endeavors to sift truth from pretension, and proves, in our opinion beyond the shadow of a doubt, that on the 10th of December, 1844, Horace Wells, then a dentist at Hartford, Conn., conceived the idea of rendering himself so insensible by the inhalation of nitrous oxide, that he could have a tooth extracted without pain, and that he proved it on the following day by experimenting on himself. It was not until the 30th day of September, 1846, that W. T. G. Morton, a dentist of Boston, Mass., used ether for the first time, for the same purpose. We commend this volume to the careful perusal of all who feel an interest in the great discovery of the unfortunate Dr. Wells. M.

Why not? A Book for every Woman. The prize essay to which the American Medical Association awarded the gold medal for MDCCCLXV. By Horatio Robinson Storer, M.D., of Boston. Boston, Lee & Shepard, 1867.

This little book is "issued for general circulation by order of the American Medical Association;" and it deserves to be read not only by every woman, but likewise by every man, and particularly by every pharmacist. It presents the subject of forced abortion in a calm, but earnest manner, and shows it to be a crime against the infant, its mother, the family circle and society; it treats of the excuses and pretexts that are given for the act, discusses its frequency, and points out the measures of relief. We have noticed with satisfaction that the discussion on this subject is kept up in medical journals, and believe that beneficial results would be obtained if it was discussed also in pharmacial circles. It is a well known fact that there are certain quacks,—for physicians they cannot be called, though they possess diplomas from whatever medical college,—whose chief business is the production of abortion among the single and the married. This criminal practice is discountenanced by every respectable physician, and the hoodwinking at this crime ought to be frowned down by every true pharmacist. Those who sell those numerous nostrums called golden pills, female pills, &c., &c., to the use of which women are invited by cautioning them against their use during pregnancy,—the venders of such nostrums, we say, did they never reflect on the improper uses to which they are put? Did they never consider themselves aiders of and accessories to the crime of abortion? If they did not consider it a crime, let them read Dr. Storer's book, and if that does not convince them, it will convince us that pharmacy can expect as little from such followers as the medical science gains from the graduate in medicine who degrades himself to become an abortionist. M.

Serpents in the Dove's Nest. By Rev. John Todd; D. D. I. *Fashionable Murder.* II. *The Cloud with the Dark Lining.* Boston: Lee & Shepard, 1867.

This pamphlet bears on the same subject as the foregoing, considering the crime chiefly in a religious point of view. We wish both works a very wide circulation, so that they might be read by "every woman."

The art of manufacturing Soap and Candles, including the most recent discoveries; embracing all kinds of ordinary hard, soft and toilet soaps, especially those made by the cold process; the modes of detecting frauds, and the making of tallow and composite candles. By Adolph Ott, Ph. D. Philadelphia, Lindsay & Blakiston.

This is a neat little volume of nearly two hundred pages, aiming chiefly at practical instruction. The wood-cuts of apparatus are very well executed, and convey a clear idea of their intrinsic parts. The instructions for making soap and candles are clear and concise, and we think will furnish many useful hints to those interested in that industrial branch. From our personal knowledge of the author, we expected, however, to see the chemical portion of his treatise treated with more regard to the present actual state of this important science. The paragraph "potassa," in chapter ii., states: "This alkali is called in commerce vegetable alkali, sal tartar, pearlash, potash, and hydrated protoxide of potassium." The idea which the author intended to convey is not clearly expressed; for he knows very well that under the above names potassa, its carbonates, and mixtures of the two in different states of purity, are known. The commercial "concentrated lye" that we are acquainted with is not liquid, as stated on page 40. The explanation of the term "fat," on page 57, is scarcely satisfactory, nor is the enumeration of margaric acid among the common fatty acids in consonance with our present knowledge of the fats; for Heintz has long since shown that what has been called margaric acid by Chevreul and afterwards, is a mixture of stearic and palmitic acids, and this latter, though present in most animal and vegetable fats, is not named at all by Mr. Ott. If alcohol, treated with one-half of 50 grains commercial soda, leaves, on evaporation, 20 grains of caustic soda, the commercial article would contain 80, not 40 per cent. of the alkali. Page 44 is to be corrected by reading 100 instead of 50. In chapter v., "valuemetry," the instructions for determining the amount of fat are not clear enough; instead of washing the fat on a filter, it is best washed by repeated fusion with pure water. For determining the amount of rosin in soap, the well known approximate methods are given; we can appreciate the difficulties to be contended with in this case, having ourselves experimented for a lengthy period without arriving at any more satisfactory results. For estimating the amount of alkali in soap, the reader is referred to the chapter on alkalimetry, where commercial alkalies only are treated of.

We are sure that in a new edition the author will remedy such defects; in the meantime we commend it to the favorable notice of those interested.

M.

The art of Perfumery, and the methods of obtaining the odors of plants ; with instructions for the manufacture of perfumes for the handkerchief, scented powders, odorous vinegars, dentifrices, pomatums, cosmetics, perfumed soaps, &c. To which is added an appendix on preparing artificial fruit essences, &c. By G. W. Septimus Piesse. Second American, from the third London edition. Philadelphia, Lindsay & Blakiston, 1867.

The original series of papers contained in this volume were reprinted in this journal during the years 1854, '55 and '56. The first American edition was noticed on page 383 of the volume for 1856. The present edition contains about one hundred pages more than the previous one ; this enlargement is chiefly made up by collecting the information on the substances used in perfumery, scattered through different works and journals ; otos and odorous plants omitted in the former edition have been added, and some corrections made. Thus we find notices of camphor, cucumber, hodosmia, musk seed, myrrh, narcissus, peppermint, pimento, rue, &c. The bouquet *Iceland wintergreen* is now stated to be made upon the strength of the name of *Gaultheria procumbens*, while formerly it was credited to *Trientalis europæa*. Under the head of Laurel, the oil of *Cherry laurel* is noticed ; the erroneous statement in the first edition that the oil of the fruit of *Laurus nobilis* possessed an odor similar to bitter almonds, has been omitted. Recipes for some new perfumes and similar preparations have been added, and a few old ones appear under a new name ; thus the *Rifle Volunteers' Garland* is the Windsor Castle Bouquet of the former edition, and *Piesse's Posy* was formerly noticed as Bouquet Royal.

The work is handsomely gotten up by the publishers, and we commend it to the notice of all those who wish to obtain a glimpse into the "secrets of perfumery." There is still room for improvement in noticing odorous plants and otos, and in omitting recipes for perfumes which have "had their day," and introducing others now in fashion ; but since the work was evidently written less for the purpose of giving recipes, but rather to impart a knowledge of *how* combinations of odors are to be effected, the discriminating reader will find much to repay a careful perusal. M.

Scientific Journal : a weekly record of scientific and practical information on manufactures, inventions, mechanics, the arts, &c. \$3.00 per annum. Philadelphia, 411 Walnut St.

This new journal will be "devoted to the interests of inventors, manufacturers and patentees," and will "contain useful information upon all subjects connected with such interests." The first seven numbers now before us prove that the editors endeavor to faithfully come up to their promise. The *Scientific Journal* is ably edited, well printed, and published at a low price. If it continues in the same cosmopolitan spirit, we have no doubt that it will be a "success." M.

JOURNALS, &c., RECEIVED SINCE THE LAST ISSUE.

- The Pharmaceutical Journal and Transactions, London.
The Chemist and Druggist, London.
Chemical News, London.
Vierteljahresschrift für praktische Pharmacie, Munich. By Dr. G. C. Wittstein.
Journal de Pharmacie et de Chimie, Paris.
Journal de Chimie Médicale, de Pharmacie et de Toxicologie, Paris.
Repertoire de Pharmacie, Paris.
Revista Farmaceutica, Buenos Ayres.
The Druggist's Circular and Chemical Gazette, New York.
American Journal of the Medical Sciences, Philadelphia.
Journal of the Franklin Institute, Philadelphia.
Proceedings of the American Philosophical Society, Philadelphia.
Proceedings of the Academy of Natural Sciences of Philadelphia.
Boston Medical and Surgical Journal.
The American Journal of Science and Arts, New Haven, Conn.
The Medical and Surgical Reporter, Philadelphia.
The American Journal of Insanity, Utica, N. Y.
Medical News and Library, Philadelphia.
The Cincinnati Lancet and Observer, edited by Dr. E. B. Stevens.
The Ohio Medical and Surgical Journal.
The Chicago Medical Journal, edited by Samuel Brainard, M. D., and J. Adams Allen, M. D.
The Pacific Medical and Surgical Journal, edited by Henry Gibbons, M. D. San Francisco, Cal.
Buffalo Medical and Surgical Journal, Buffalo. Edited by Dr. I. F. Miner.
The Chicago Medical Examiner, Chicago.
Eclectic Medical Journal. Edited by Dr. J. M. Scudder.
The San Francisco Medical Press. Dr. E. S. Cooper, Editor.
St. Louis Medical and Surgical Journal. Edited by Drs. Linton and White.
Dental Cosmos. Edited by J. H. McQuillan, D. D. S., and George J. Ziegler, M. D.
The Richmond Medical Journal. Edited and published by Drs. Gailard and McChesney. Richmond, Va.
The Journal of Materia Medica. Edited by Dr. Joseph Bates and H. A. Tilden, New Lebanon, N. Y.
New York Medical Journal.
United States Medical Journal, Chicago.
The Savannah Journal of Medicine. By MM. Harriss, Read and Thomas.
The Medical Reporter: a semi-monthly Record of Medicine and Surgery. St. Louis.
The Medical Record. New York. Semi-monthly.
The Journal of Applied Chemistry, New Lebanon, New York. Prof. Dussauce, Editor.
Atlanta Medical and Surgical Journal. Atlanta, Ga.
The Detroit Review of Medicine and Pharmacy.
The Nashville Journal of Medicine and Surgery.
The Dental Times: a Quarterly Journal of Dental Science.
The New Orleans Medical Record. Vol. I. Nos. 1, 2, and 3.
Southern Medical and Surgical Journal, Augusta, Ga.
New Orleans Medical and Surgical Journal, New Orleans, La.
The Leavenworth Medical Herald. Leavenworth, Kansas.
Scientific Journal. Philadelphia.

AMERICAN JOURNAL OF PHARMACY.

THIRD SERIES.

This Journal is devoted to the advancement of Pharmaceutical knowledge, including practical Pharmacy, Materia Medica, and Chemistry, in its general and applied relations, and to the collateral sciences, Botany, Mineralogy, Zoology, &c. Intended for the benefit of the Apothecary, the Druggist, and the Physician, it merits their patronage and support.

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SUBSCRIPTIONS should be paid to CHARLES ELLIS, N. E. corner 7th and Market streets, Philadelphia, Treasurer of the Publishing Committee, and all letters relating to the distribution and financial affairs of the Journal must be sent to the Treasurer, as above.

ADVERTISING SHEET.—An advertising sheet will be appended to each number of the Journal, in which advertisements of new preparations and apparatus, business notices, book notices, etc., will be inserted at the rate of \$5.00 per page for one insertion, or \$20.00 per annum for six insertions.

As a prominent object of the establishment of this Journal, was the discouragement of empiricism, advertisements of quack medicines, properly so called, will be excluded. Advertisements to be directed to the Editor as above.

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JOURNAL OF PHARMACY,

PUBLISHED BY AUTHORITY OF

THE PHILADELPHIA COLLEGE OF PHARMACY.

EDITED BY

WILLIAM PROCTER, JR.

THIRD SERIES.]

SEPTEMBER, 1867.

[VOL. XV. NO. V.]

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NOTICE BY THE PUBLISHING COMMITTEE.

The American Journal of Pharmacy has now completed its 38th volume. On an examination of the stock of the Journal, the Committee find that eight of the volumes are wholly or partially out of print—viz., vols. 1, 2, 3 and 5 of the first series, and vol. 1 of the 2d series, and the 4th, 5th and 13th vols. of the 3d series. All the remaining volumes, 29 in number, they can supply on demand. Believing that the work embodies a large amount of information, extremely valuable to Apothecaries, Druggists and Physicians—comprehending, in fact, a faithful record of the development of Pharmaceutical science and inventions during the period of its issue, now about thirty-eight years, both in Europe and America, the Committee consider that no Pharmaceutical library should be without it.

Besides the abstract and applied science embodied in this work, a large number of formulæ are contained in it, including many, which though not official, are more or less valuable and in use.

As an inducement to Subscribers to complete their sets as far as possible, the Committee offer the back volumes to the 24th inclusive, at the reduced price of \$1.50 each, nett.

The volumes 25 to 38 inclusive, except the 28th and 29th volumes, are held at the publishing price, 3.00, unless a full set is taken, in which case they will be supplied at \$2.50 per volume.

The Committee offer the publication price in money for the 4th number of the 1st volume, published January, 1830; for the complete 2d volume, commencing April, 1830; for the complete 3d volume (1831); for the complete 5th volume, 1833, and for the complete 7th volume, commencing April, 1835. They will also be glad to receive and pay for the January and July numbers of 1857, for the March number, 1856, for the 37th volume, (1865,) and for the January number, 1866.

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W. PROCTER, JR.,

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THE
AMERICAN JOURNAL OF PHARMACY.

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SEPTEMBER, 1867.  
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PHARMACEUTICAL NOTES.

BY C. LEWIS DIEHL.

Lead Plaster.—The formula of our Pharmacopœia directs that the litharge be sifted into the oil, boiling water added, and the mixture boiled until a plaster is formed, with occasional addition of water. When this direction is followed, it is almost impossible to obtain a plaster perfectly free from uncombined litharge, and I do not believe that it is followed by manufacturers on a large scale. I have prepared the plaster frequently during the past three or four years, and invariably succeeded in obtaining a handsome plaster, entirely free from uncombined litharge, by first rubbing the sifted litharge with about half its weight of oil, stirring this mixture into the remainder of the oil, contained in a tinned copper kettle, adding the water, and heating to above 212° F., until a uniform plaster was formed, which occupied from one to two days. It is not necessary to boil the plaster, which, requiring the application of direct heat, is apt to burn it, and therefore requires constant attention. I generally prepared it in a steam kettle, under a pressure of ten pounds of steam, and do not think that the temperature ever rose above 230° F. Its manufacture in small quantities may be conducted on a chloride of zinc bath, and the process requires but occasional stirring and renewal of the water as it evaporates. It is true that when direct heat is employed,

the plaster is finished in a shorter time; but this is fully compensated by the little attention required, and the improved quality of the product. A. Graf, in a late number of "Buchner's Repertorium," advocates a similar process, which requires, however, that the mixed litharge and oil be added to the remainder of the oil previously heated; this preliminary heating, in my experience, is not necessary.

Soap Plaster.—In preparing this plaster, the soap is rubbed with water to a semifluid consistence, and then stirred into the melted plaster. It is difficult, however, to rub the soap up perfectly and rapidly, and I therefore found it convenient to strain the mixture, obtained by triturating the soap with its weight of water, through coarse muslin, and to reduce the residue with a proportionate amount of water, before stirring it into the plaster. This procedure insures a perfectly smooth, uniform plaster. It may seem trifling to draw attention to so insignificant a matter; but these little advantages frequently save much trouble, for which reason it is here noted.

Oil of Turpentine.—A short time ago, I received from a wholesale firm in this city a sample of oil of turpentine, which was of a pale green color, evidently contained copper, and was consequently unfit for sale. I am informed that this is not an isolated case, but that oil in a similar condition has been met with before. The copper was readily removed by shaking the oil with a small amount of a saturated solution of prussiate of potash, and allowing it to rest for two to three days, when it was drawn off clear.

Syr. of Phosph. of Iron, Quinia and Strychnia, so highly recommended by Drs. Aitken and Lyons as a powerful tonic combination, has of late come into considerable use in this city, but unfortunately is very unstable. Several of our leading pharmacists, who prepared the syrup according to the formula published in A. J. Ph., March, 1867, p. 177, and manipulated as suggested by Mr. Chas. Bullock, found that in a short time it deposited a white precipitate, and soon became dark-colored. I have not given the subject sufficient attention to point out a reliable means of avoiding this, but would suggest that the syrup be

filled, as soon as finished, in small, well-corked vials, covered with blue paper, so as to exclude light and atmospheric air. I am inclined to think that this will prevent change, from the fact that some of the syrup which had been wrapped and corked securely, and placed on the shelf for sale, remained unchanged during the time in which a portion of the same lot, exposed to light in a loose-stoppered bottle, had formed a deposit and became darkened.

The precipitate formed was examined, and found to consist of phosphate of iron; it was feared at first that a portion of the quinia or strychnia was also precipitated, but this was negatived by appropriate tests.*

Adulterated Oil of Lemon.—Preparing, a short time ago, some extract of lemon, I was surprised to find that a large percentage of the oil of lemon employed was insoluble in alcohol. The insoluble portion, evidently fixed oil, was not acted upon at all by new additions of strong alcohol, and amounted to over 33 per cent., a little over two pounds remaining from six pounds of oil of lemon. This residue was introduced into a still, with five gallons of water, and distilled until three gallons of distillate were obtained; the first gallon contained about ten ounces of oil of lemon; the remaining two gallons had but a slight odor of lemon, and remained perfectly clear after standing for more than a week.

The fixed oil remaining in the still, when separated from water, amounted to about $1\frac{1}{2}$ pounds or 25 per cent. of the oil of lemon originally used. It was of a viscid consistence, (intermediate between olive and castor oil,) insoluble in absolute alcohol, but readily dissolved by ether or chloroform, of a yellow color and of a very rancid odor and taste. Its sp. gr. was 0.925 at 62° F.; its boiling point was not ascertained, as I was not in possession of a thermometer graduated sufficiently high, but it is above 500° F. It is acted upon violently by nitric acid, less so by sulphuric acid, and least by chlorhydric acid. The most

* The amount of phosphoric acid is insufficient to keep all the iron in solution after it becomes oxidized by contact with the air. Diffused daylight is without action on it.

J. M. M.

remarkable fact in regard to it is that it is not saponifiable by alkalies, either at ordinary or boiling temperatures, all experiments to that effect having failed. As all fixed oils, whether of vegetable or animal origin, are saponifiable, it is not improbable that this oil is of mineral origin, perhaps approximating to the so-called lubricating oils obtained from lignite, which sometimes have a sp. gr. as high as 0.960 (*Oppler*). My knowledge of these oils is, however, but limited, and I can therefore merely state these facts, but shall, perhaps, find time shortly to give the subject more attention, when I will communicate the results.

The oil of lemon under consideration reached us through a Chicago firm, but has not been traced further. It was of tolerably good odor, but more viscid than the ordinary oil of lemon, and had a sp. gr. of 0.890 at 62° F., which is considerably higher than that of pure oil of lemon.

Louisville, Ky., July 11th, 1867.

ON A PERMANENT SOLUTION OF PYROPHOSPHATE OF SODA AND IRON.

BY JOHN M. MAISCH.

A "subscriber" desires some light regarding a heavy white precipitate which appears, on standing, in a secret preparation styled Elixir of Pyrophosphate of Iron and Soda. Having never seen the preparation in question, and not being over anxious to analyze a medicine when the so-called proprietors withhold the formula and *modus operandi*, we will endeavor to throw some light on the other desire of our correspondent,—to obtain a working formula for such a preparation. In this connection it will not be amiss to give a short historical sketch of our knowledge of the pyrophosphates.

About forty years ago, S. Engelhart* observed that albumen is precipitated by phosphoric acid prepared by burning phosphorus, or by heating the ordinary acid to redness. Shortly afterwards, Stromeyer noticed that phosphate of soda, heated to redness, will precipitate silver salts white, and the same discovery was made about the same time by Clarke,† who applied to the

* Poggend. Ann. ix. 631.

† Edinb. Journ. of Science, vii. 298.

acid thus obtained the name of pyrophosphoric acid. Stromeyer* proved that the two phosphoric acids have the same composition, and that the precipitates by pyrophosphate of soda in solutions of the metallic oxides are redissolved by an excess of the precipitant; exceptions are mercuric and chromic oxides, baryta, strontia and lime, which are soluble only in small proportions. Stromeyer observed also that by heating with nitric acid, also with sulphuric, muriatic, acetic and ordinary phosphoric acids, the pyrophosphoric acid and pyrophosphate of soda are converted into the ordinary acid and phosphate.

Graham† published, in 1833, the results of his beautiful investigations on the constitution of phosphoric acid and the phosphates, and added a third one—metaphosphoric acid—to those previously known.

Boussingault‡ found that insoluble phosphates cannot be converted into pyrophosphates by heating to redness.

Peligo§ analyzed recently prepared glacial phosphoric acid, and found it to be the monohydrate; after it had partly liquefied by absorption of moisture and crystallized again, the lower layer of crystals consisted of the deutohydrate, and the upper layer of the terhydrate.

Persoz|| observed that the solutions of several double salts of pyrophosphates possess a peculiar behaviour towards various reagents, which are useful for detecting metallic oxides, but do not disturb their solution in the form of a double pyrophosphate. It occurred to him that a soluble double pyrophosphate of iron might be a valuable curative agent, for obvious reasons; and he prepared a solution of the ferric soda salt by converting 32.5 grm. crystallized protosulphate of iron into the tersulphate, adding enough water to make one litre of solution, and mixing this with one litre of solution of crystallized pyrophosphate of soda prepared from 110 grammes with sufficient water. This solution contains in each litre 3.27 grammes of iron = 4.68 grm.

* Götting. gelehrte Anzeigen 1830, No. 12.

† Philosoph. Transact. 1833, ii. 253.

‡ Ann. de Chim. et de Ph. 1834, fevr. 185.

§ Ann. de Chim. et de Ph. lxxiii. 286.

|| Ibid, lxxiii. 163.

sesquioxide = 10.99 grm. $2\text{Fe}_2\text{O}_3, 3\text{bPO}_5 = 13.36$ grm. $2\text{Fe}_2\text{O}_3, 3\text{bPO}_5, 9\text{HO}$. This latter amount is equal to 206 troy grains, and each fluidrachm of the solution as used by Persoz contained therefore 1.45 troy grains of hydrated pyrophosphate of iron.

In 1849, Dr. Leras advocated the use of the same compound,* because he conceived that it was the only preparation not precipitated by the agency of the food or gastric juice,—a supposition which I shall prove to be incorrect.

A few years later, Professor L. A. Buchner† again called attention to Persoz' observations. Based upon the experience that the bitter saline taste of the sulphate of soda formed produces an aversion when used continually in the recommended strength, Buchner proposed to prepare it from perchloride of iron, to dilute it so that 16 ounces represent one grain of metallic iron, and to impregnate the solution with carbonic acid. For convenience he recommended a normal solution, containing in each ounce one grain of iron, so that the physician might obtain a solution of any desired strength. This preparation, we are informed, is still used by many physicians of Munich.

Robiquet‡ proposed to combine ferric pyrophosphate with citrate of ammonia (or of soda), to render it permanently soluble in water. Many formulas for liquid and solid preparations of this compound were subsequently published in the pharmaceutical journals of all countries, and the dry salt was admitted into our pharmacopœia.

In 1859, A. F. Haselden§ and myself|| noticed the solubility of the *ordinary* ferric phosphate in citrate of ammonia, and Prof. Procter published some formulas¶ for prescribing extemporaneously the phosphate of iron in solution. I am not aware that the therapeutic value of ferric *pyrophosphate* was ever claimed to be superior to the *ordinary phosphate*, except for its solubility, and this at a time when the solubility of the latter was un-

* See U. S. Dispensatory, 1866, 1144.

† Repert. f. d. Pharm. 3 Ser. vii. 38, 1851.

‡ Gaz. Méd. de Paris, 1857, No. 7. See Am. Journ. Ph. 1857, 401.

§ Pharmaceut. Jour. August, 1859.

|| Amer. Jour. Pharm. 1859, Sept., 410.

¶ Ibid, 413.

known, except in acids. It seems that in England this solution of the phosphate in citrate of ammonia is, or rather was used under the name of pyrophosphate,* with which it closely agrees in color, solubility, stability and taste; and it is remarkable, therefore, that our pharmacopœia adopted this last preparation, which possesses probably no advantage except that of a higher price.

Heydenreich† examined more closely the behaviour of phosphate of iron in contact with its various solvents, and again recommended it for medicinal use.

The latest investigation is by J. H. Gladstone,‡ who confirms the analysis of the hydrated pyrophosphate of iron ($2\text{Fe}_2\text{O}_3, 3\text{bPO}_3, 9\text{HO}$), and observed the existence of an allotropic ferric pyrophosphate, which is insoluble in alkaline pyrophosphates, and which is obtained by heating a solution of the pyrophosphate with a large excess of sulphuric acid.

Before I had seen Dr. Gladstone's paper, and while experimenting with the view of obtaining a permanent solution of pyrophosphate of iron and soda ("Subscriber's" note was received in the beginning of June), I had noticed that the precipitate from a mildly acid solution of the double pyrophosphate, which had formed in the course of a few weeks, was so different in its behaviour to the usual solvents of ferric pyrophosphate, that I inferred a change to ferric *phosphate* had taken place under the influence of the acid. Since meeting with the above paper, however, I have convinced myself that it consists still of pyrophosphate, though Stromeyer may be correct in regard to the conversion of pyrophosphates into phosphates by continued boiling with acids.

I have endeavored to prevent this change, and from a large number of experiments which have been made I select the following, as capable of throwing some light on the subject. To avoid frequent oxidation of the protosulphate of iron, I made use of the carefully prepared officinal solutions of persulphate of iron, —namely, of the liquor ferri subsulphatis and liquor ferri ter-

* Amer. Jour. Pharm. Sept. 1859, 412.

† Chem. News, iv. 158.

‡ Chem. News, xv. 327.

sulphatis, the former of which represents 480 grains crystallized protosulphate of iron in each fluidounce, consequently 1 gramme in each cubic centimeter, while the latter contains only half that quantity in the same measure,—namely, 240 grains in the fluidounce, or .5 grm. in each cubic centimeter. Instead of the protosulphate of iron ordered by Persoz, corresponding quantities of these solutions were used.

1. The pyrophosphate of iron was made from tersulphate of iron at the boiling point of water; the precipitate was insoluble in the soda salt; the liquid reacted acid.

2. Made at 125° F. solution was effected, but precipitation commenced before the whole of the liquid could be filtered.

3. Temperature 100° F. Solution complete; the filtrate remained clear for several days. At the end of ten or twelve days a bulky precipitate had appeared; the clear supernatant liquid was separated, but continued to precipitate. Exclusion of light did not prevent precipitation.

4. Ordinary temperature (between 70 and 80° F.) Solution took place slowly, the liquid retained a slight opacity; precipitation commenced in a few days.

5. The ferric pyrophosphate was made from subsulphate of iron at the boiling point; solution took place rapidly; color brown-yellow. Precipitation takes place slowly.

6. Operated at ordinary temperature. Solution takes place without difficulty; liquid colorless, perfectly transparent; becoming brownish-yellow on boiling; slight precipitation as under No. 5.

7. Ammonia added to Nos. 4 and 6 produced a reddish-brown color; liquid clear and transparent after seven weeks.

8. Sulphuric, muriatic, nitric or phosphoric acid added to No. 6 until the reaction was acid, instantly caused a turbidity and induced precipitation, which gradually increased.

9. Syrup added to No. 7 remained transparent in thin layers after seven weeks, but the color was darkened, so as to appear brown-black in reflected light.

10. Little alcohol added to No. 9 remained transparent for several days, then it became darker in color and gradually pro-

duced a whitish precipitate, the supernatant liquid retaining a yellowish brown color.

11. Before precipitation commenced, No. 6 was mixed with solution of citric acid, a slight turbidity appeared without producing a precipitate; in the course of a week syrup and little alcohol was added; the liquid remained unchanged in appearance for six weeks.

12. No. 11 was boiled, when the cloudiness increased; the alcohol which had evaporated was added, when the liquid at once became turbid and precipitated.

13. Before precipitation commenced, No. 6 was mixed with acetate of ammonia, which did not react upon the iron, and the solution remained transparent for seven weeks.

14. Alcohol, added to No. 13, produced turbidity and gradually a white precipitate.

15. On boiling, No. 13 assumed a slight yellowish color, then became milky and gradually produced a white precipitate.

16. No. 8, which had been rendered turbid by the addition of sulphuric acid, became clear and almost colorless again on the addition of carbonate of ammonia, and remained in this condition for seven weeks.

17. Little alcohol added to No. 16 gradually produced a white precipitate.

18. Boiling scarcely affects No. 16, except in the presence or subsequent addition of alcohol.

19. 1 part *pure* pyrophosphate of iron with 5 parts pyrophosphate of soda, dissolved in 120 parts distilled water, yielded a colorless solution, remaining clear for seven weeks, with the exception of the production of a little mould; boiling did not sensibly affect it, but disposed it to the slow separation of a white precipitate.

20. No. 19 gradually yielded a white precipitate with little alcohol.

21. Little phosphoric acid added to No. 19 did not cause any change except, on heating, a white precipitate.

22. No. 19 gradually became yellowish on standing, with little citric acid; boiling rendered it turbid.

23. No. 19 yielded a clear brown solution, with an excess of ammonia; nearly the whole of the iron was deposited in the course of a few weeks as brown floccules.

24. Pure pyrophosphate of iron, apparently dissolves in ammonia to a transparent brown liquid, which separates gradually the iron in the form of bulky brown flocks, readily suspended, by agitation with syrup, to a nearly transparent liquid.

25. Tartaric or citric acid added to No. 24 yields a permanent solution.

26. Acetate of ammonia added to No. 24 does not prevent the separation of the ferric oxide.

27. 1 part *officinal* pyrophosphate of iron with 5 pyrophosphate of soda, dissolved in 120 parts distilled water, yielded a faint green yellowish solution, in which, on standing, a slight precipitate occurred.

28. Little alcohol added to No. 27 favors the separation of the deposit and increases it.

29. Citric acid added to No. 27 appears to merely increase its tendency to mould.

30. Phosphoric acid has little action on No. 27 in the cold, but when heated will render it turbid.

31. An excess of ammonia added to No. 27 yields a clear liquid which slowly deposits the iron, and this may be readily suspended again to an almost transparent brown liquid by agitation.

Summing up the results of the foregoing experiments we find :

I. Pure pyrophosphate of iron, dissolved in pyrophosphate of soda, will be retained in permanent solution only in case the liquid is kept slightly alkaline or strictly neutral.

II. This solution will be disposed to precipitate gradually the iron salt if alcohol is present or the liquid becomes acid from any cause whatever.

III. A boiling temperature promotes the change of the iron salt, either to the insoluble modification of pyrophosphate or to the ordinary phosphate; the presence of acids and certain salts hasten this change.

The difficulty of obtaining a permanent liquid pharmaceutical

preparation explains itself from the above, particularly if a so-called "elixir" is desired, which term now-a-days applies to pleasant forms of alcoholic beverages. The necessity of such a preparation is moreover very questionable, since the ordinary perphosphate of iron is readily kept in solution by citrate of ammonia, since we have an officinal soluble pyrophosphate of iron containing about half its weight of the pure ferric salt, and since solution of pyrophosphate of iron in pyrophosphate of soda may be made extemporaneously without difficulty. We append the following two formulas, as indicating the mode in which it may be prescribed:

R. Liquor. ferri tersulph.,	℥ lx.
Sodæ pyrophosphatis,	gr. C.
Ammoniæ carbonatis,	gr. xxx.
Aquæ destillatæ,	f3 vij.
Syrupi simplicis,	f3 vi.
M.	

In this formula the addition of some carbonate of ammonia is necessary to at least neutralize the acid liberated. The next one does not require this addition, unless kept on hand for a long time:

R. Liquor. ferri subsulphat.,	℥ lx.
Sodæ pyrophosphatis,	gr. CC.
Aquæ destillatæ,	f3 xiv.
Syrupi simplicis,	f3 iss.
M.	

The mode of manipulation is to dissolve the pyrophosphate of soda in about one-half of the water, add the syrup, then the iron solution and, without the application of heat, agitate for a few minutes until the precipitate is redissolved; finally add the remainder of the water, holding, in the former case, the carbonate of ammonia in solution. Acids and tinctures must be avoided; if some flavor is desired, a *distilled* medicated water may be substituted for the whole or a portion of the water.

If the iron solutions had been properly prepared, these preparations will be permanent, and each fluidrachm will contain $1\frac{1}{2}$ grains of dry pyrophosphate of iron, equivalent to about $2\frac{1}{2}$ grains of the officinal salt of that name.

NOTES ON POWDERED CASTILE SOAP.

BY JOSEPH P. REMINGTON, Brooklyn, N. Y.

The following notes are contributed to the present fund of knowledge on the subject of drug powdering :

Exp. 1. 986 avoirdupois ounces of white Castile soap (Conti) were shaved into thin slices, by means of a common cabbage cutter, then spread on shallow trays, and exposed to the air in a drying room, temp. 84° F., for one week, transferred then to a drying room, temp. 125° , and left there three weeks, at the end of which time it weighed 724 ounces avoirdupois, thus losing 26.57 per cent. of water ; it was then powdered in the ordinary chaser or Chilian mill, and lost 7 ounces more in the process of pulverizing, making the total loss 27.28 per cent.

Exp. 2. 960 ounces avoirdupois of the floating variety of white Castile soap, after standing in a moderately dry room for fifteen months, (losing 224 ounces, or 23.3 per cent.) on being further dried and powdered, in a similar manner, lost 56 ounces more, making a total loss of 280 ounces, or 29.16 per cent.

Exp. 3. 1112 ounces avoirdupois of mottled Castile soap (commercial) treated precisely in the same way, lost 320 ounces, or 28.8 per cent. The average loss on five previous lots was 21 per cent., the amount of water present varying in each case, losing respectively 20, $11\frac{1}{2}$, 18, 27 and 29 per cent. The lots which lost $11\frac{1}{2}$ and 18 per cent. had undoubtedly been kept some time, and in the case of the lot losing $11\frac{1}{2}$ per cent., half of the water which would help to form the ordinary loss was lost before it was sent to powder. The first and last experiments were made with soap recently imported. It will be noticed that in these experiments (which I may state were carefully conducted) that the mottled Castile soap does not support its reputation for strength, (its only credited merit over the white.) According to the U. S. Dispensatory, good mottled Castile soap should not contain more than 14 per cent. of water ; this contained, then, double the proper amount. The same authority states that white Castile soap should not have more than 21 per cent. in both experiments with the white, it was found to contain an excess of at least 6 per cent. of water.

There is an important reason for not putting the soap in the room of higher temperature at first, for it would then melt, instead of drying properly, and become unmanageable. The powder from the first experiment was fine, light, and very white; that from the second was not so white, owing, probably, to the fact of its being kept a greater length of time and the presence of a little sesquioxide of iron, the color of the iron being masked when the soap was fresh, as in the first experiment, the iron being then in the state of protoxide; 21 cents per lb. was paid for the white soap (in Exp. 1) which was a low figure, (Feb., 1867), and as the loss was 27·28 per cent., allowing 12 cents per lb. for powdering, the lowest cost of the powder would be 38 cents, and yet a powdered white Castile can be *bought* for that price; the inference regarding the character of such a powder is of course unmistakable. It would be an easy task for the Pharmacist to prepare his own powdered soap, the only necessary outlay would be for that unscientific instrument, the cabbage cutter, which, however, could be used with advantage in making tinct. sapon. camph., opodeldoc, soap plaster, &c., not to speak of its legitimate use; for small operations the soap could be shaved with a spatula. If a drying room is not at command, the difficulty of drying it thoroughly may be overcome by shaving the soap very thin, then spreading on paper and setting in a warm place; the drying of course is hastened by a current of air. After it becomes dry and friable, it can be easily powdered in a mortar and sifted through a fine sieve, and the Pharmacist has then the satisfaction of saving the difference in the cost of powdering and of furthering the cause of "Medicinæ Puritas."

ON EPSOM SALT IN CITRATE OF MAGNESIA SOLUTION.

BY WILLIAM R. WARNER, OF PHILADELPHIA.

Much of late has been written on Citrate of Magnesia, but no very definite or satisfactory data have been arrived at, whereby the difficulty of obtaining an uniformly permanent solution has been overcome and a desirable result attained. Much improvement, however, in the construction of the formula has been made; the same being made easy of manipulation over the old receipt of

the former edition of the Pharmacopœia. It is not my intention here to try to solve the problem.

My attention has been directed to an article labelled "Effervescent Solution of Cit. Magnesia," extensively manufactured and sold by a firm in this city. An analysis of this preparation shows Epsom salt amongst its constituents, and upon which its efficacy mainly depends.

Resulting from this investigation, I have constructed a formula with such additions and alterations as might seem to make it complete, when it may be desirable and necessary for the physician to prescribe such an article.

It is as follows :—

R. Acid. Citric,	℥j (Av.)
Magnesia Calc.,	3½ oz. "
" Sulph.,	6 " "
Aquæ Puræ,	Cong. j.

The above ingredients may be thrown together in a bottle, and occasionally shaken until dissolved; then filter.

As it affords a permanent solution, any quantity desirable may be prepared at a time, or as called for, if preferred, by taking of the above solution, to each bottle, four fluidounces; lemon syrup, ten drachms; bicarbonate of potash, one-half drachm; fill conveniently full with water, and securely cork.

The syrup and flavor, with the excess of acid, serves to cover very effectually the disagreeable taste of the sulphate of magnesia. This solution, which contains about half the quantity of citrate of magnesia intended by the official formula, affords an active purgative in full doses, without the embarrassment occasionally produced upon the stomach by the official preparation, and to this may be added the advantages of permanence and economy afforded by this formula.

PHARMACY OF THE CINCHONAS.

By EDWARD R. SQUIBB, M. D., of Brooklyn, N. Y.

(Continued from page 303.)

The experiments undertaken to elucidate this subject have occupied more than six weeks of time, and involved over forty percolations on the scale of the Pharmacopœia, and some fifty

or sixty assays, and yet it is hoped that all the most useful results and deductions may be presented by a few examples in a small space.

The Cinchona adopted for the experiments was the Red variety, because this involves the greatest difficulties in management, and any formula based upon it would be more easily applicable to the other varieties. A well-known lot of Red Cinchona, in the condition of a very fine commercial powder, was taken, and its proportion of impure alkaloids was reconfirmed by the critical application of Winckler's full process of assay, and also by the modification of his process above given with the apparatus, materials and other adjustments, which were prepared in quantity to be used throughout the course of research. The proportion of impure alkaloids was determined to be 34 grains to the 1000 grains of the powder, or 3.4 per cent., and it was thus proved to be a high grade of Cinchona, and well adapted to yield safe typical results for use as a model. It was of a rich full red color, compact and dense in structure before powdering, was very dry, and yielded a very fine, light, bulky, mobile powder, of a thoroughly uniform character and quality. The percolations were made without excessive care, or more skill than would be ordinarily applied to the process, but the separation of the different measures of the different parts of the percolate as it came through were made with care and accuracy by means of standard measuring flasks marked in the neck, and by the use of graduated pipettes.* Parallel experiments were always carried along together, and when unexplained variations occurred, the experiments were repeated for confirmation, so that neither care nor ordinary judgment were wanting to secure accuracy in the results.

* It may be usefully remembered that about 29.52 cubic centimeters is a fluidounce, and that in practice this becomes pretty accurately 30 c. c. Thus, a graduated French pipette of say 50 c. c. capacity becomes a most useful instrument in the management of our fluidounce measure. Recently some of the importers of French and German graduated pipettes have imported some of just 30 c. c. capacity, and divided into 0.2 c. c., which are still more convenient. By means of these the common "graduate measures" can be easily tested in all their sub-divisions.

The first experiments were made with mixtures in various proportions, of alcohol and glycerin as a menstruum, but it was found that where less than the present officinal measure was to be the result these mixtures were not easily practicable, and that even with the present measure for the fluid extract the management was difficult and tedious. A percolator with but twice the officinal quantity, and not tightly packed, and managed by Mr. Taylor's formula, with a menstruum of equal measures of alcohol and glycerin, has now stood upon the writer's table since near the commencement of these experiments. From April 15th to May 23d was required for liquid to reach the lower end of the percolator, and now, June 11th, the amount of percolate accumulated in the flask does not amount to more than four fluid-ounces. As the weather grows warmer the rate increases a little, but the prescribed measure will hardly be received before the autumn. The percolate is very peculiar, and the exhaustion will be sudden and perfect with the very smallest possible quantity of menstruum, for it is an axiom in percolation that the slower it is performed the more perfect and sudden is the exhaustion, and with the smallest quantity of menstruum. With a conical percolator, however, without packing, but with only a gentle compression of the moistened powder after it is all in the funnel, and in warm weather, a very nice preparation of the officinal measure may be obtained by Mr. Taylor's process, if the one to be offered further on be not admitted as preferable. In this the use of glycerin in the menstruum is given up, as being difficult and without any compensating advantage, since both alcohol and diluted alcohol were proved to exhaust the bark as perfectly when used alone as when mixed with the glycerin. That is, the proper function and uses of the glycerin being to preserve the preparation rather than to extract the Cinchona, it is added where its usefulness begins,—namely, after the extraction of the bark. This point established, it next became necessary to decide between alcohol (officinal s. g. .835, or 85 p. c.) and diluted alcohol (officinal s. g. .941, or 39 p. c.), as the best menstruum by which to extract the medicinal properties of the Cinchonas; and in the investigation of this question it must be borne in mind that the best menstruum not only involves the

cheap, easy, perfect and speedy exhaustion of its medicinal properties, but also involves the leaving behind it all that is not medicinal, because such matters are objectionable not only as being useless, but as overloading the preparation. The question also involves the extraction of the medicinal properties in their natural condition and combinations in the case of the Cinchonas. In assisting to decide between these two menstrua, the following results of a carefully conducted experiment may be given. Two portions of 16 troyounces each were moistened with 10 fluid-ounces of menstruum, packed as nearly alike as practicable, in cylindrical glass percolators of the same size and form, and then managed throughout as nearly the same as was easily practicable, the only intentional difference being that Alcohol was used with one and Diluted Alcohol with the other. The percolates were received in separate portions, the first portion of 16 f $\bar{3}$., and then six other portions of 8 f $\bar{3}$. each, making in all four pints of percolate in seven portions. From each portion, as received, 30 c. c. or 1 f $\bar{3}$. was taken, to determine the proportion of extract, and exactly the same quantity to determine the impure alkaloids by the process of assay previously described. The portions for extract were dried at a temperature of 220° F., or 105° C., for five hours, and thus gave a uniform resinous extract that was quite dry. The portions for assay were managed in a uniform way, so that their relations as series might be tolerably accurate, though their relations to the Cinchona might be less so. This trial was repeated three times without obtaining the uniformity of result that was desired and expected, though two of the pairs agreed within useful practical limits, and all agreed in their general indications. The general result is that the alcoholic menstruum yields the most extract and the most alkaloids, though even as a general result, this must be received subject to farther confirmation, because slight differences in managing the percolations materially modify the results. For example, the alcoholic menstruum, everything else being equal, passes most rapidly; and this circumstance is not favorable to rapid or perfect exhaustion with a given amount of menstruum. Then if the packing for alcohol be harder, so as to bring the rate of percola-

tion nearer to uniformity, the exhaustion by the thinner, more mobile menstruum must from these physical properties be better. And when it is borne in mind that the exhaustion of Cinchona, even when in very fine powder, is not complete either in regard to extract or alkaloids, by four or even by five pints of percolate from 163, the difficulties in arriving at accuracy will be easily understood. The results are therefore given as being useful, though not fully established, but as quite safe in their relations to pharmacy, supported as they are upon other good grounds, hereafter to be alluded to. The results of one good pair of the percolations is as follows :

TOTAL PERCOLATE 4 PINTS.	PERCOLATED WITH OFFICIAL ALCOHOL, 85 P. C.				PERCOLATED WITH OFFICIAL DILUTED ALCOHOL, 30 P. C.			
	Yield of Extract dried at 105° C.		Yield of impure alkaloids.		Yield of Extract dried at 105° C.		Yield of im- pure alkaloids.	
	From the 30 c.c., or 1 fl.	From the whole portion of percolate.	From the 30 c.c., or 1 fl.	From the whole portion of percolate.	From the 30 c.c., or 1 fl.	From the whole portion of percolate.	From the 30 c.c., or 1 fl.	From the whole portion of percolate.
Divided into 7 successive por- tions, the first 16 fl., the others 8 fl. each.								
From each por- tion 30 cc. = 1 fl. taken for drying, and for assay.								
1st portion 16 fl.	grs. 61.5	grs. 984.0	grs. 7.15	grs. 114.4	grs. 57.2	grs. 915.2	grs. 7.30	grs. 116.80
2d " 8 fl.	27.6	220.8	4.80	38.4	28.3	226.4	4.60	36.80
3d " "	18.2	145.6	3.30	26.4	13.0	104.0	2.08	16.64
4th " "	13.4	107.2	3.00	24.0	7.8	62.4	1.10	8.80
5th " "	9.7	77.6	1.50	12.0	6.0	48.0	.55	4.40
6th " "	7.2	57.6	1.30	10.4	5.0	40.0	.50	4.00
7th " "	5.9	47.2	0.90	7.2	4.5	36.0	.42	3.42
Total.	143.5	1640.0	21.95	232.8	121.8	1432.0	16.56	190.86

This Cinchona had been previously found to contain 3.4 p. c. of impure alkaloids, which would give 261 grs. as the proportion in 163, or 7680 grs. of the powder. These percolations give with alcohol 232 grs., with diluted alcohol 191 grs. The loss of 29 grs. in the first may be due chiefly to the seven processes of assay instead of one, and to a very small extent to the more perfect exhaustion in the case of the one critical assay. If this 29 grs. be adopted as the error for loss by these causes, and be applied to the results from diluted alcohol, the difference in the yield of impure alkaloids by the two menstrua would be 41 grs., or 15.7 per cent. of the whole, in favor of alcohol as a menstruum.

The indications which may be drawn from a comparison of

the dried extract are in the same direction, and here the chances of error and inaccuracy are somewhat diminished, whilst the experiments for extract were more numerous, though the difference in the proportion was often smaller than in these two percolations. Here the difference is 208 grs., or nearly 12·7 per cent. of the whole extract in favor of alcohol as a menstruum. The dry extract by alcohol is of a richer darker color, and makes a heavier denser powder. The powdered extracts, when subjected to the solvent action of Alcohol, Diluted Alcohol, and Acidulated Water, in the cold, dissolve in the following proportion :

Of the Alcoholic extract, 85·8 p. c. is soluble in Cold Alcohol.			
	78·8	“	“
			Diluted Alcohol.
	49·7	“	“
			Acidulat. Water.
Of the extract by Dil. Alcohol, 85·4 “		“	“
	87·8	“	“
			Diluted Alcohol.
	51·7	“	“
			Acidulat. Water.

But the amount of extract yielded to Alcohol being 12·7 per cent. greater—or, by concession to the diluted menstruum, in order to avoid all probable sources of error, say only 5 per cent. greater,—then the proportion of total extract soluble again would stand as follows :

	Alcoholic Extract.	Extract from Dil. Alcohol.
By Alcohol,	90·09 p. c.	85·40
Dil. Alcohol,	82·74 “	87·80
Acid. Water,	52·18 “	51·70
	<hr/>	<hr/>
Total redissolved,	225·01	224·9

Or, would be practically the same in weight. The residue left undissolved by these menstrua is, however, very different in appearance from the two extracts. The portion of the alcoholic extract insoluble in alcohol is pulverulent, tasteless, and insoluble in water. The corresponding portion from the extract by Diluted Alcohol is compact, of a gummy fracture, slightly bitter and saline in taste, waxy between the teeth, and soluble in water to a considerable extent. The insoluble residues left by Diluted Alcohol were similar in appearance and taste, and in solubility, though very unlike in quantity. That of the extract from Diluted Alcohol is much smaller in quantity, and more waxy between

the teeth. The residues insoluble in acidulated water differ slightly in color and density, and are both more bitter than the other residues. All the residues are freely soluble in weak alkaline solutions, but those from acidulated water only are bitter.

The percolate from a pair of these percolations, after standing about four weeks in the flasks, only loosely covered from dust, showed a bulky looking deposit in the first five flasks of each percolate, but no deposit in the last three flasks. This deposit was carefully filtered out on weighed filters, dried and weighed. That from the alcoholic percolate weighed 23·3 grains; and that from the Diluted Alcohol percolate 22·2 grains, or practically the same, and very small in proportion to the appearance of the deposit when in the liquid. This deposit commences to form in the percolate within twenty-four hours after the percolate is received, and as soon in the one case as the other. That from the Alcoholic percolate, when dry, separates from the filter easily and completely, and is lighter colored, less dense, and is bitter. That from the Diluted Alcohol percolate adheres to the filter, and is only partially separated by scraping, is darker colored, more dense, and is tasteless, or very nearly so. Both are nearly all soluble in boiling alcohol, and in great measure deposited again on cooling. Both are nearly all soluble in a cold mixture of one-fourth glycerin and three-fourths alcohol, and the solubility is not perceptibly increased by heating; nor is there a perceptible deposit on cooling. These solutions are deep blood-red, and pleasantly bitter. They contain alkaloids, but in too small a proportion to be estimated without more time and skill than the writer has at command. It may be stated here as a matter of judgment,—and not at all of research,—that the proportion of alkaloids in the deposit from well-made preparations of Cinchona has been commonly over-estimated, and may be safely disregarded in practice with Cinchonas, the best qualities of which often vary to the extent of a half to one per cent. in the alkaloids they contain. For example, if this whole deposit was alkaloids, instead of containing only a small proportion, and should be added to the previously ascertained alkaloid value of this bark, it would only raise it from 3·4 per cent. to 3·7 per cent., while the differ-

ent lots of all the higher grades of Cinchona vary among themselves far more than 0·3 per cent. Therefore, until we become more critical and expert in the selection of Cinchonas in the markets, such refinements seem superfluous, and may be safely postponed to a more advanced stage in the progress of pharmacy.

While the general tendency of all the experiments and deductions is toward Alcohol as the best menstruum for exhausting Cinchonas, it may yet be safest, in view of the previous universal usage, to leave the question still open for farther research and confirmation, accepting the results here given only so far as to admit that Alcohol is a good menstruum, and capable of accomplishing the object without difficulty or disadvantage, except from its greater cost. This much being taken as established, other results come up for consideration.

All the experiments show conclusively that Cinchona is much more difficult to exhaust than was heretofore commonly supposed; and that the quantity of percolate prescribed by the Pharmacopœia for the fluid extract, instead of being excessive, as was believed by the writer, must, under any ordinary management, with good Cinchona, come far short of practical exhaustion, by either menstruum, even when fine powder is taken instead of the "moderately fine," (50 meshes to the inch,) as directed. Repeated experiments with powder that passed easily through bolting cloth of 110 meshes to the inch, and with both menstrua, showed that the fifth pint of percolate contained by assay from a half to two per cent. of the total impure alkaloids in the Cinchona. The officinal quantity of percolate cannot therefore be accepted as practically sufficient with either menstruum. Nor is the prescribed fineness of powder well adapted to economical exhaustion. The apparent exhaustion of the coarser powder by Diluted Alcohol must have been judged of by the color and taste of the percolate, and is apparent only, the outside of the particles being only imperfectly washed or exhausted by the passing menstruum. With fine powder and the same menstruum the color and taste are very different.

The percolate instead of being "evaporated by means of a water bath" should with either menstruum be distilled, and the

Alcohol saved. By the officinal process with Diluted Alcohol, when either evaporated as directed, or distilled as proposed, until the residue measures the prescribed two pints, all the Alcohol, practically speaking, will have passed off, leaving a yellow muddy looking liquid, which, with the sugar added, measures over $2\frac{1}{2}$ pints, and requires prolonged heating and stirring to get it down to the prescribed two pints of finished product. This fluid extract, often while hot, and always when cool, is a muddy looking inelegant preparation too thick for convenient use, and yet representing the Cinchona in double its weight. The Alcohol, however, lost by the officinal evaporation, is almost entirely saved if distilled in a water bath, and when diluted to the prescribed strength, is ready for use again, whilst the additional heat required for distillation is more than counter-balanced by the long exposure and oxidation incident to evaporation.

On the other hand, if Alcohol be used as the menstruum, and in sufficient quantity for a thorough practical exhaustion of the Cinchona, the percolate, no matter how large in quantity, may be distilled in a water bath with ease, with much less heating, in a much shorter time, and the Alcohol may be saved with the exception of 12 to 20 per cent. loss, incident to percolation and distillation. This loss is about the same upon four pints as upon six, and varies with the amount of knowledge and skill applied to the process. The residue in the still after distillation consists of 5 or 6 f $\bar{3}$ of dense liquid extract, transparent, of a fine rich red color, nearly free from Alcohol, and containing the whole of the medicinal properties of the percolate, unimpaired by prolonged heating or oxidation. This, by ten minutes active stirring on the water bath, may be reduced without change, except in consistence, to a tenacious extract, weighing less than 4 $\bar{3}$, which becomes brittle when cold, and is almost entirely soluble in Alcohol. This extract is entirely soluble in Glycerin in all possible proportions, and the solutions appear to be permanent. It is also soluble in all mixtures of Glycerin and Alcohol; and in all mixtures of Glycerin and water which do not contain more than one-fourth of their volume of water. It is soluble in a mixture of equal measures of Glycerin and water while hot,

but a large proportion is deposited on cooling. When dissolved in an equal weight of Glycerin this dense solution is soluble in all proportions in Alcohol, Diluted Alcohol, Brandy and Whiskey, but makes a turbid solution with wines. The permanence of these solutions cannot of course be determined within the few weeks embraced in these experiments.

From these results, affecting the pharmaceutical management alone, (having established the chemical and physical equality of the two menstrua,) it will probably be admitted by all, that Alcohol is the best menstruum for pharmaceutical use with the Cinchonas, and this point is considered by the writer as established.

The advantages of Glycerin over Sugar are too apparent and too decided to admit of doubt, or to warrant any farther detail, and it is considered that nothing short of some unexpected development of time in the keeping of the preparations can overturn the conclusions of Mr. A. B. Taylor on this point, and these may therefore be accepted as also established.

Then the only notable objection to reducing the volume of the fluid extract to an accordance with the fluid extracts in general, is that it doubles the strength of a preparation now pretty well known and in established use, a change always very objectionable, though in this instance not dangerous, whilst it is supported by considerations of convenience, economy, and uniformity, and by the increased probability of being beyond future change or discredit. Taking all the circumstances into consideration, the writer recommends the next Committee of Final Revision of the Pharmacopœia to adopt these changes, provided the preparations keep well; and to test this last point, a set of specimens are preserved by the writer, duly labeled with references to this paper, and these specimens are now placed at the service of the future Committee of 1870, in case of casualty to the writer. Portions of the preparations have also been placed in the hands of judicious physicians for critical trial in practice.

It now remains only to give the detailed formulas which are based upon the foregoing observations and deductions, with the necessary comments upon their practical application. These are given in the order in which they are found in the Pharmacopœia.

Little can be usefully said in regard to the official Decoctions and Infusions of the Cinchonas. In the writer's judgment the barks should be directed in fine powder—the finer the better. The use of an acid in the infusions, but not in the decoctions, affords the necessary variety to those who prefer either the undisturbed combinations of the Cinchonas, or to have these broken up and new combinations artificially produced by the superadded acid. In all these preparations, however, the bark is imperfectly exhausted at best, and good quality of Cinchona is indispensable to any very useful effect. The use of these preparations has very much diminished within the past few years, the result probably of damage to a deserved and well earned reputation, through the use of inferior barks.

Extractum Cinchonæ.

The official process yields a very good extract, and is simple and easy under proper management, but is still believed to be susceptible of improvement. In a critical trial with it, using a Yellow Cinchona which yielded over four per cent. of impure alkaloids and was therefore of very fine quality, it was found, first, that 3 f℥. of Alcohol is not sufficient to moisten the Cinchona for packing; that with four pints of Alcohol poured on top and followed by water, only about $3\frac{1}{2}$ pints of "tincture," or alcoholic percolate free from water could be obtained; that then about 13 f℥. of percolate passed which was a muddy looking mixture of the Alcohol and water, when the percolate became transparent and watery, of a light wine color, but slightly bitter at first and very slightly bitter at last. The $3\frac{1}{2}$ pints of alcoholic percolate yielded 3 pints of recovered Alcohol fit for use again, and within 3 grains of $3\frac{3}{4}$ of fine transparent extract. The 13 f℥. of percolate next following, yielded 3 f℥. more of weak Alcohol, and 116 grains of brown extract, mucilaginous but not very bitter. The 6 pints of watery percolate yielded 45 grains of black, tar like extract, mucilaginous and but slightly bitter. This latter extract appeared to contain but a mere trace of alkaloids, and these much changed by the long evaporation. The extract from the second portion of percolate appeared to be largely mucilaginous. From these results it is concluded that the alcoholic percolation of the official formula is not carried far

enough to practically exhaust the Cinchona, and that the watery percolation is entirely useless. The total extract of 83, 158 grs. is very nice and doubtless efficient, but in keeping becomes hard, resinous and soluble with difficulty. The defects of this process may be remedied and a better result obtained by the following formula :

Take of Cinchona, either Red or Yellow, in fine powder,
 sixteen troyounces,
Glycerin, one troyounce,
Alcohol, six pints and ten fluidounces,
Water, a sufficient quantity.

Mix the Cinchona with thirty fluidounces of the Alcohol by thoroughly stirring them together in a proper vessel ; cover the vessel and, having allowed the mixture to stand half an hour, pour it into a glass funnel prepared for percolation. Then pour the remainder of the Alcohol on top as required, and follow this with water until the percolate becomes cloudy and makes a precipitate in the receiving vessel. Then distil off the Alcohol from the percolate by means of a water bath, and stir the residue on the water bath until it becomes a thick extract weighing four troyounces. To this add the Glycerin and heat the mixture with stirring until a perfectly uniform mixture is obtained weighing not more than five troyounces. Each grain of this extract represents a little more than three grains of the Cinchona.

The Red Cinchona may be substituted for the Yellow in this formula when desired, the management required being the same for both.

The extract of Yellow Cinchona is more antiperiodic and less astringent. That from Red Cinchona perhaps more purely tonic and more astringent.

In working the above formula successfully, the powder should be very fine—the finer the better—and the Alcohol of full officinal strength (s. g. .885.) After many trials with various proportions of Alcohol to moisten the powder, it was found that almost equally good results were obtained with all reasonable proportions after a moderate experience and skill were acquired in arranging and packing the percolator, but that the results were so much improved by education and skill that it was de-

sirable to adopt a plan which required the least skill, and would give uniform results without so much education and practice. The plan of wetting the powder into a uniform fluid magma was found, in the process for assay, to facilitate the perfect exhaustion of the powder, while it at once did away with all possible irregularity in rubbing up the moist powder and in packing it—the two points so essential to success—and those which require most education and skill in their proper performance. Beside this, when the powder is wetted into a uniform liquid magma the air in great measure escapes to the surface, thus diminishing a troublesome interference with uniformity in percolation, and, as the writer believes, diminishing the oxidizing effect by which this interstitial air changes a part of the alkaloids. To say the least, and without theorizing upon oxidation, the largest proportion of alkaloids were *almost* invariably obtained, both in the assaying and in the practical percolations, when the powder had been wetted to a uniform magma which could be poured into the funnel, or on the small scale, could be slowly transferred on the end of a spatula, to avoid smearing and loss. By allowing the wetted powder to stand for half an hour, covered to prevent unnecessary loss of Alcohol, before being transferred to the funnel, it swells and absorbs much of the menstruum, becoming much less fluid than when first mixed. This somewhat facilitates the exhaustion. The preparation or mounting of a funnel for percolation requires much care and some skill, and is so important that it will, even at this late day in the career of percolation, warrant a detailed description. The funnel should be of glass where any form of tannin is present as in the Cinchonas, and of a size not less than $8\frac{1}{2}$ to 9 inches across—the larger the better, within reasonable limits, since it holds more menstruum on top, and thus requires less attention and diminishes loss by evaporation. This should have as close a cover as practicable, and an ordinary breakfast or dinner plate—not turned upside down, but set into the funnel with the rim of the plate on the edge of the funnel, and with a piece of oiled muslin or oiled silk under it—serves an excellent purpose. The funnel should be supported in a funnel board, the hole being of such a size as to allow the funnel to pass more than half way through, and the

board should be mounted high enough to admit of the use of two pint flasks under the outlet. The percolate should always be received in flasks or bottles for the same reason that the funnel is kept closely covered, namely, to diminish the loss by evaporation in a slow process of dropping. Beside this, the flask may be converted into a sufficient still by means of a perforated cork, india rubber tube, condenser and an extemporized water bath. A piece of bung cork about 2 or $2\frac{1}{2}$ inches in diameter and an inch thick is filed to the shape of a truncated cone so as to fit the inside of the funnel over the outlet and lie firmly in its place, and a round piece of flannel or blanket is cut a little larger than the upper surface of the cork. A round filter 4 inches in diameter is cut in nearly to the centre all round by converging cuts with a scissors, and this placed under the cork applies itself closely to the funnel and projects above the cork all round. The disc of blanket is laid on the cork, inside this projecting edge of the filter, and then another filter 3 inches in diameter, cut in toward the centre round the edge, but not so deeply as the first, is applied on top of the blanket and forms a kind of cup to receive the first portions of wetted powder. The magma should be poured in slowly at first, and into the centre of this little cup, so as to press and flow outward equally in all directions, and thus force the paper against the glass as the contents accumulate. When the magma rises above the edges of the paper it may be transferred more rapidly, and when all is carefully scraped into the funnel a larger filter—say $7\frac{1}{2}$ inches in diameter and cut round the edge—is placed upon the surface and carefully pressed in contact over the surface and against the side of the funnel at the edge. A funnel and appliances thus prepared, including flasks as receivers,* is called through-

* There are few things more convenient to a practical pharmacist than a set of marked flasks from two pints down to four fluidounces, accurately measured and marked in the neck by means of a file or diamond, and carefully tared in grains and the weight scratched on the flask. They may be accurately marked by weighing into the clean, dry flask, counterbalanced on a good scale, recently boiled distilled water at 60° , 7291 grains to the pint. The French measuring flasks may also be used when the mark is higher in the neck so as to admit the other mark below for wine measure. The pint being about 473 cubic centimetres, it is only

out this paper, "a funnel prepared for percolation." The magma is scarcely transferred to the funnel before the dropping commences, and this dropping is pretty rapid at first; but with a constant and plentiful supply of menstruum on top, if the powder be very fine, the dropping rate soon diminishes to about 20 to 22 drops per minute and so continues to the end. When the prescribed 6 pints and 10 f $\bar{3}$. of Alcohol is used on top in this way, it happens with great uniformity that 6 pints and about 2 f $\bar{3}$ of alcoholic percolate can be obtained before any sign of water is seen in the percolate. If, however, the funnel has a very close cover, and the point passes well into the body of the flask, and especially if the weather be cool, all of which circumstances diminish the loss by evaporation, 6 pints and 4 f $\bar{3}$, or even 6 pints and 6 f $\bar{3}$ may be obtained before the water makes its appearance at the outlet. When it does so appear the percolation is finished, and the residue in the funnel will be found almost tasteless, except the lowest strata, and there but moderately bitter.

The point of time at which the water makes its appearance is very easily seen by the muddiness produced in the percolate. This point should be watched for, and the receiver frequently changed, to avoid getting much water into the percolate.

In the trials with these percolations to determine the point of practical exhaustion, the percolates were assayed repeatedly for alkaloids after 4 pints, after 5 pints, after 5½ pints, and after 6 pints. When the powder was fine, alkaloids precipitated by ammonia were always found, even after 6 pints, but the proportion rarely exceeded 4 grains to the half-pint. After 5 pints, the 6th pint usually gave about 1 grain of impure alkaloids to each fluidounce of the pint. The 5th pint gave a much larger proportion, and varied more.

The percolate after the 6th pint is, from Red Cinchona, almost as dark as port wine, and quite bitter. From Yellow Cinchona it is sherry wine colored, and quite bitter.

necessary to take out from an accurately filled half litre flask, 27 cubic centimetres, and mark this new level lower in the neck, in order to have a standard for both the new and old measures. A single flask carefully made serves to make others by, and a set of such standards once established soon become indispensable.

This percolation occupies about forty-eight hours, but requires little or no attention if the funnel and receivers be large enough.

A very considerable economy in alcohol may be effected when larger quantities of Cinchona are percolated, by a method called by the writer Repercolation. This consists in percolating one portion of the powder with the percolate from a previous portion. This method will be briefly described in some of the formulas of this paper; but for a detailed description, and the interesting results of some experiments and much practice, reference must be made to a paper to be presented at the approaching annual meeting of the American Pharmaceutical Association. The paper is entitled, "Repercolation applied to the Cinchonas, as a method of economizing Alcohol in the exhaustion of drugs."

In order to recover the alcohol from the percolate, a small water-bath still and condenser is necessary. One the inner vessel of which holds 4 pints, is very convenient, but that used by the writer for many years past holds only two pints, and is quickly and easily managed over a small table gas burner. The weight of this vessel should be indelibly scratched on it. From the 6 pints of percolate 5 pints 4 f $\frac{3}{4}$ is usually recovered before the dropping becomes too slow to compensate the time and fuel, and the alcohol so recovered is of a proper strength to be used at once for a fresh portion of Cinchona. The Cinchona odor, however, unfits it for most other uses. The head of the still is then removed, and a weighed stirrer, with a somewhat broad flattened end, introduced. The thin rich-looking liquid extract usually measures about 4 $\frac{1}{2}$ to 5 f $\frac{3}{4}$. when the head is removed, and this, by about ten minutes' active stirring on the bath, is easily reduced to four troyounces. The shape of the end of the stirrer has very much to do with the rapidity and facility of this part of the process, and if a rod be used, the time required is much longer. The weight of the still and stirrer being known, it is easy from time to time to set the vessel on a scale until the proper weight, or near it, is attained. The troyounce of Glycerin is most conveniently added while the vessel is sitting on the scale, care being taken not to pour in too much. The vessel is then replaced in the water-bath, and heated until the Glycerin becomes sufficiently hot and fluid to dissolve the extract, and the

stirring is continued until a perfectly uniform mixture is obtained. During this heating and stirring there is always an additional loss of weight, which should be disregarded, or made up with a little alcohol, according to the consistence of the extract and the richness of the Cinchona. In order that 1 grain of the extract should represent exactly 3 grains of the powdered Cinchona, the total extract must weigh 53. 160 grs. But it is quite near enough, and usually makes a better consistence when the extract weighs 53. or a little less. With the quality of Cinchonas used by the writer, and the Glycerin of full official strength, this extract when hot is thin enough to be easily managed and transferred to pots (the inside surfaces of which should be moistened with Glycerin) with facility, and when cold is firm enough to be rolled into pills which retain their form for a short time pretty well, even in warm weather.

(To be continued.)

GLEANINGS FROM GERMAN JOURNALS.

BY J. M. MAISCH.

On the Quantity of Fibrin separated from Blood. Dr. Sigmund Mayer obtained the blood from the carotis of a dog through a forked tube. The fibrin was washed with water, exhausted with boiling alcohol, dried between 110° and 120° C., and weighed. The results of his experiments are as follows:—

1. Two portions of the same blood, treated precisely alike, may yield equal or different quantities of fibrin.

2. These irregularities occur whether the blood coagulates quietly, by beating or shaking.

3. The same is the case, whether the rapidity of coagulation is increased by heating in a water bath to 45° C., or delayed by immersing in ice.

A sufficient explanation of this behavior cannot be given; it seems to support the hypothesis of Al. Schmidt; that variable quantities of fibrino-plastic matter, of which blood contains an excess, enters into the formation of fibrin.

The author corroborates the statements of others regarding the great variations in the amount of fibrin yielded by the blood of different individuals.

When large quantities of blood were repeatedly taken from dogs at intervals of from two to eight days, each successive portion of blood contained more fibrin. (Verh. d. Kaiserl. Akad. d. Wiss., 1867, xviii., 143—145.)

Poisoning by Decoction of Poppy Capsules. Dr. F. L. Winckler relates a fatal case of poisoning of a babe, from whose stomach he succeeded in isolating a little morphia, but was unable to discover meconic acid. Prof. L. A. Buchner mentions a similar case of poisoning, in which he could not find any morphia in the stomach. In the case of a boy of five years, who was killed by three doses of acetate of morphia, of two grains each, no morphia could be discovered in the stomach. (Buchner's N. Repert, 1867, 85—43.)

Liquid Soap. D. Aug. Vogel, Jr., recommends for this purpose Heeren's directions to saponify a mixture of 100 grammes glycerin and 32 grms. olein with 17 grms. concentrated potassa solution. To the soap, which is of the consistence of honey, add 3.5 grms. carbonate of potassa, dissolved in little water, allow to rest for some time, and decant. This soap may be mixed with, and serve as a vehicle for the external application of tannin, iodine, bromine, &c. (Ibid, 65.)

Titration of Tannin by Glue. A suitable solution of glue, which shows no tendency to decompose, is made by dissolving 16 grms. purified glue in 16 CC. water, adding 1 gm. muriatic acid and 1.5 gm. sulphate of zinc, diluting to 200 CC. and decanting; it is then measured so that 100 CC. are equal to 3 or 4 grms. tannin. (Ibid, 66.)

Constituents of the Bark of the Apple-tree Root, by Rochleder. The sugar of lead precipitate in the decoction of the bark is partly soluble in acetic acid. If the insoluble portion is treated with HS, and the filtrate evaporated, in vacuo, to a syrupy consistence, alcohol leaves pectin behind, and its solution, after distilling in vacuo, and evaporating over sulphuric acid, yields a small quantity of crystals of the composition $C_{48}H_{30}O_{24}$, probably $4C_{12}H_8O_{14} - 2HO$. The air-dry substance must have had the composition of citric acid; it lost, on drying, 6.74 per cent. water. (Calculation 6.72.)

The acetic acid solution obtained as above yields, with Gou-

lard's extract, a small precipitate, which, treated like the former precipitate, yields more of the same crystals.

The filtrate from the last precipitate by subacetate of lead gives, with ammonia, a bulky precipitate, which, freed from lead and the water evaporated over sulphuric acid, yields crystals of the lime compound of phloretin. The mother liquor contains a modification of the tannin of the bark, which is identical with the tannin of *Æsculus Hippocastanum*, and undoubtedly the material yielding the phloretin, which differs by a plus of C_4H_4 from the composition of the tannin; both, on splitting, give phloroglucin. A substance, having the composition of salicylic acid, yields an acid homologous with the former.

The bark of the trunk contains a compound dyeing yellow. *Ibid*, 71—74.

Creasote. Prof. v. Gorup-Besanez writes: It will interest you to hear that the beechwood tar creasote, obtainable at present from Mayence, differs from the Bohemian, but is likewise not identical with phenylic acid. It agrees in boiling point, specific gravity and composition with Völckel's creasote. I am at present investigating the products of substitution by chlorine, which likewise are not chloranile.—*Ibid*, 110.

Preparation of pure Corrosive Sublimate. Prof. D. H. Fleck, of Dresden, evaporates ten pounds mercury with $1\frac{1}{4}$ its weight (12.5 lb.) concentrated sulphuric acid, evaporates carefully until a grayish-white saline mass remains behind, containing neutral and acid mercuric, and some mercurous sulphate. Nine pounds pure table salt is added, and the mixture sublimed. Sublimation begins a little above $200^\circ C.$, continues very uniformly, and yields, besides muriatic acid, a dense white sublimate entirely free from adhering acid. A salt containing 7.43 parts mercurous oxide was entirely free from calomel.—*Ibid*, 116, 117, from *Journal f. prakt. Chem.*, 1866, Heft 19 and 20.

Delicate test for Lime. Sonstadt recommends tungstate of soda as the test for lime, which is as delicate as chlorides for silver, or sulphates for baryta. An excess is to be avoided, since tungstate of lime is slightly soluble in tungstate of soda.—*Ibid*, 188, from *Jahresber. d. phys. Ver. zu Frankfurt*.

FORMULAS FROM JOURNAL DE CHIMIE MÉDICALE.

The following formulas, many of which were originally published in *l'Union Médicale*, are taken from the above-named journal—1867—January to July.

Pennès Antiseptic Liquid. Bromhydric acid, two parts; pure phenylic acid, eight parts. Mix in a porcelain capsule, placed in a sand or steam bath, and stir with a glass tube. When the combination is effected, fill in small glass-stoppered vials.

Vulnerary Ointment, (Guérit-tout des Anciens), by M. Perret. Arnica flowers, 50 parts; flowering tops of St. John's wort, 25; of vervain, 15; lard, 800 parts.

Antispasmodic and Antineuralgic pills of M. Rayer. Extract of valerian, assafoetida, galbanum, castor, of each, one gramme. Make into 18 pills, of which one is to be taken three times daily.

Confection of Cinchona and Sulphur in Chronic Bronchitis, by Dr. De Smet. Powdered cinchona, flowers of sulphur, of each 10 grammes; syrup of marsh-mallow, q. s. If there is no tendency to diarrhœa, the cinchona is reduced one-half. Dose: A coffee-spoonful four times a day, to be continued for two or three weeks.

Application for Neuralgia, by Dr. Gray. Tincture of aconite, chloroform, of each, five parts; lard, 20 parts. Mix. After applying the ointment, the place is covered with cotton.

Colombin in Dyspepsia, by Wittstock. The alcoholic extract of colombo is treated with water, and agitated with an equal volume of ether. The ethereal solution is drawn off; the greatest part of the ether distilled off; the last allowed to evaporate; the crystals are washed with cold ether, and dried. Dose: Five to fifteen centigrammes a day.

Copland's Compound Confection of Cinchona. Powdered Calisaya bark, 30 parts; confection of rose, 15 p.; dilute sulphuric acid, 3.75 p.; ginger syrup, 45 p. Dose in intermittent fever: Four to eight grammes three or four times a day.

Chloroform Water (Eau Chloroformée). Distilled water, 200

grammes; chloroform, two grammes. Agitate well. For external application in cephalalgia, besides sinapisms.

Odontalgic Drops of Righini. Alcohol, 8, creasote, 12, tincture of cochineal, 4 grammes; oil of mint, 6 drops. Mix.

Odontalgic Drops, of Copland. Opium and camphor, of each, 60 centigrammes; alcohol, q. s., (?) to dissolve; oil of cloves and of cajeput, of each, four grammes. Mix. To be applied with cotton.

Powder for Destroying Warts, by Hunter. Powdered savine and verdigris, equal parts. Mix.

Teething Syrup, of Delabarre. Fresh juice of tamarinds (pulp?) 3 grammes; infusion of saffron, (made of 6 centigrammes,) 2 grms.; clarified honey, 10 grms.; tincture of vanilla, 25 centigrammes. Mix. To be rubbed on the gums.

Electuary of Sulphur in Habitual Constipation. Washed sulphur, 30, cream of tartar, 15, white honey, 90 parts. Mix. Dose: A coffee-spoonful once or twice a day.

Plasma of Oxide of Zinc, (Glycéré d'Oxyde de Zinc—Rollet.) Glycerin, 16 grammes; starch, 8 grms. Heat carefully until a gelatinous mass is formed; then add oxide of zinc, four grms.

Velpeau's Black Caustic. Triturate, in a porcelain mortar, 30 grms. powdered liquorice root, and add sulphuric acid in small quantities until a mass of suitable consistence is obtained, which must be neither too hard nor too liquid. This preparation forms a well-marked hard black eschar.

Mayet's Syrup against Diarrhœa. Powdered gum-arabic, 15 grms.; distilled cinnamon water, 15 grms.; distilled mint water, 10 grms.; syrup of quinces, 20 grms.; extract of opium, 5 to 10 centigrammes. Dissolve the gum in the syrup, add gradually the distilled waters, and finally dissolve the extract of opium.

Thus prepared, the syrup will keep for a long time. Mixed with half a tumbler of water, it forms an astringent potion, of which a tablespoonful may be taken every hour in cases of diarrhœa accompanied with colic.

J. M. M.

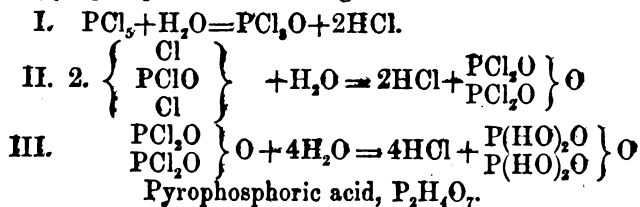
ON PYROPHOSPHORIC ACID.

BY DR. J. H. GLADSTONE.

According to Graham's original view of the constitution of this acid, when regarded as $2\text{HO},\text{PO}_5$, it was believed to be a bibasic acid. Since the atomic weight of oxygen has been doubled, its formula is written $2\text{H}_2\text{O},\text{P}_2\text{O}_5=\text{P}_2\text{H}_4\text{O}_7$, and it becomes a tetrabasic acid. The correctness of the latter view receives support from the existence of amides containing one, two, and even three molecules of NH_3 in the place of HO . The present paper treats of some normal pyrophosphates, and certain allotropic modifications of these salts, and indicates the constitution of the acid as deduced from several modes of formation. The author confirms Schwartzberg's analysis of the ferric pyrophosphate, $\text{P}_2\text{Fe}_4\text{O}_7+3\text{H}_2\text{O}$,* and suggests the existence of a soluble double salt $\text{P}_2\text{Na}_2\text{Fe}_2\text{O}_7$. The cupric salt was found to have a similar composition, but contained only two atoms of water. Dr. Gladstone mentioned some remarkable facts tending to establish the existence of an allotropic ferric pyrophosphate. Thus, if a solution of sodium pyrophosphate be mixed with a large excess of sulphuric acid, and ferric chloride then added, there is no precipitate in the cold; but, on heating, a white flocculent compound is formed, which differs from the ordinary modification of that substance by being insoluble either in dilute mineral acids, ferric chloride, or in alkaline pyrophosphates. A quantity of this substance was prepared and analyzed. Its composition was found to be identical with that previously recognized—viz., $\text{P}_2\text{Fe}_4\text{O}_7,3\text{H}_2\text{O}$. It is proposed to use this reaction as a test for the acid in question. Similar results were observed in the case of copper. Regarding the modes of preparation, it was stated that the pyrophosphates had hitherto been obtained by the action of heat upon the orthophosphates, but Dr. Gladstone succeeded in producing them by dissolving phosphoric anhydride in an alcoholic solution of hydrate of potassium or other alkaline base; or, if the oxychloride of phosphorus be dropped into a strong aqueous solution of the same hydrate, the product was identical. That this

* Ferricam (fe) = 48.66. (Williamson.)

result is true in the case of the strongest ammonia, had been previously shown. The author concluded by tracing the formation of pyrophosphoric acid in stages, as follows:—



—*London Chem. News*, June 28, 1867.

OBSERVATIONS ON THE ALTERATION OF THE FREEZING POINT IN THERMOMETERS.

By DR. J. P. JOULE, F.R.S., V.P.

Having had in my possession, and in frequent use, for nearly a quarter of a century, two thermometers, of which I have, from time to time, taken the freezing points, I think the results may offer some interest to the Society. Both thermometers are graduated on the stem, and are, I believe, the first in this country which were accurately calibrated. Thirteen divisions of one of them correspond to one degree Fahrenheit. It was made by Mr. Dancer, in the winter of 1843—44. My first observation of its freezing point was made in April, 1844. Calling this zero, my successive observations have given

0 April, 1844.
5.5 February, 1846.
6.6 January, 1848.
6.9 April, 1848.
8.8 February, 1853.
9.5 April, 1856.
11.1 December, 1860.
11.8 March, 1867.

The total rise has been, therefore, .91 of a degree Fahrenheit. The other thermometer is not so sensitive, having less than four divisions to the degree. The total rise of its freezing point has been only .6 of a degree; but this is probably owing to the time which elapsed between its construction and the first observation

being rather greater than in the case of the other thermometer. The rise of the two thermometers has been almost identical during the last nineteen years.—*Lond. Chem. News*, May 17, 1867.

CRYPTOPIA, A NEW ALKALOID DISCOVERED IN OPIUM.

By T. AND H. SMITH.

There are now known to exist in opium nine undoubted principles with markedly distinguishing characters:—morphia, codeia, papaverine, narcotine, thebaia, narceine, meconine, meconic acid, and thebolactic acid.

In the multiplicity of its constituents and in its wonderful action, as well salutary as deleterious, upon the living animal system, opium takes, *par excellence*, the highest place amongst all the products of the vegetable kingdom of nature. If it should be objected that the greater part of the principles yielded by it may really be the result of the varied manipulations necessary for obtaining them, the wonder is not in the least diminished, unless, which is very far from being the case, anything like an equal number of principles of equally marked characters may have been found in any other production of vegetable nature.*

It is long since it became a conviction in our minds that the long and wonderful list of opium products does not exhaust the number which this drug might still conceal, but which may be ready to be revealed by some happy chance to the chemist possessed of sufficient opportunity for the research. In proof that

* It must not, in this connection, be overlooked that in none of the processes for obtaining the different principles of opium are the chemical actions of a very powerful nature. They consist in a few precipitations, solutions in acids, not generally more than neutral, and, in addition, the use of various solvents, such as water, alcohol, and ether, and a moderate heat. When the principles, pure and in a separate state (the remarkably ready change of meconic acid into comenic acid forming an exception), are subjected to such operations and conditions, the only result is a more or less great degeneration or destruction of the body. When more powerful agents, such as strong acids, alkalies, chlorine, or a strong heat, are used, the principles of opium, like all other organic bodies, are changed into other substances almost endless in number.

our preconception was not erroneous, we are now able to add another well-marked body to the list already admitted. The new substance is an organic alkaloid; its alkaline character is strong and decided, perfectly neutralizing the strongest acids, and forming salts. The sulphate, muriate, nitrate, thebolactate, and acetate have been produced by us,—these all crystallize in beautiful and distinct forms.

The salts of cryptopia,—a name which we have given to the subject of this paper,—especially the muriate, have a remarkable tendency to form a jelly. In this tendency they are distinguished from all the other salts of the opium alkalies, and, so far as we are aware, from most of the other organic salts. The salts of aricina form, as far as we remember, the only example of the existence of such a character. If the muriate of cryptopia be dissolved in from ten to twenty parts of hot water, the solution sets into a crystalline mass on cooling; but if the quantity of water should amount to about thirty parts, the liquid, on being set aside, instead of crystallizing, forms a jelly, which differs in appearance from pure gelatine only by being somewhat less transparent. If the jelly be now evaporated in a shallow vessel at a smart heat, it dries up into transparent horny shavings, which by continued heat become short and brittle; but if the heat of evaporation be only about 100° F., it crystallizes in flattened, striated tufts, radiating very prettily from a centre or taking fringe-like forms, and gives about $\frac{1}{2}$ of its previous weight.

In the gelatinous state the muriate of cryptopia behaves somewhat eccentrically, sometimes retaining this condition for an indefinite period, and at other times running into crystalline knots, which are then seen floating in a clear watery liquid. The muriate of cryptopia, and also, we have reason to believe, its other salts, has a character which peculiarly distinguishes it from the muriates of the other opium alkalies: for instance, if the muriate of morphia or codeia be dissolved in a quantity of hot water, such as to give a crystallization of the salt on cooling, if the resulting salt be dried by the use of bibulous paper and exposure to a gentle heat, the bulk of the salt hardly changes, and remains in a state loose and easily broken up; with muriate of cryptopia

the result is very different, the crystalline mass gradually shrinks, and by the time of complete desiccation it is found to be quite tough, and diminished in bulk to an extraordinary degree; if, on the contrary, the liquid be removed by means of a strong press, the resulting cake is tough like parchment, so as to be powdered with very great difficulty. We have not observed this character in any other salt of the opium alkalies. The crystallization of muriate of cryptopia, while lying in the liquid from which it had crystallized, is sometimes exceedingly beautiful, but on being slowly dried up, its crystalline appearance almost ceases to be seen by the naked eye; but may be again easily brought out by moistening the mass for a short time with hot water; the effect is very striking.

Under various circumstances this salt yields very fine crystals, but very different both in form and appearance from those produced in the last mother-liquids of the muriate of thebaia, in which it was first observed by the manager of our chemical works, Mr. J. Smiles, who drew our attention to the beautifully light, delicate, floating, leaf-like, and silky crystallization which it presented. This was so different in appearance from that of any other opium products with which we had hitherto been acquainted, that we felt assured of the novelty of the substance. It may not be uninteresting to remark, that in addition to its beautiful appearance, the new substance presented a feature which has been a characteristic of narceine alone of all the other principles of opium, that, namely, of crystallizing nearly colorless out of an almost black liquid. The muriate of cryptopia is much less soluble in water than the muriate of morphia. A saturated solution of the former gives only nine grains on the evaporation of a fluidounce, while the same quantity of a like solution of the latter gives three times as much. The solubility of the two salts is reversed when spirit is used as the solvent, showing that muriate of cryptopia is more soluble in spirit of wine than muriate of morphia.

Cryptopia is colorless and odorless; its salts have a taste at first bitter, but the bitterness is soon followed by a peculiar coolness, which spreads over the tongue and palate, as if there had been an addition of some peppermint. It leaves no ash

when burnt. Heated in a glass tube it remains without apparent change till the heat rises to about 400° F.; it then melts into a liquid which, on raising the heat, assumes a dark color; on cooling it becomes solid at about 340° F., and, according to the quicker or slower cooling, forms a splintered resinous-like layer, or draws into lichen-like tufts, which show a radiated crystalline structure when examined by means of a lens. When cryptopia is gradually heated to redness in a closed glass tube, it melts, blackens, gives off a watery vapor, which condenses on the cold sides of the tube; whitish-yellow vapors make their appearance, but quickly disappear; and, although there is a creeping up in the tube of an oily liquid, there is nothing to indicate sublimation. The liquid condensed in the tube at once turns reddened litmus-paper blue; the fumes from the tube have an ammoniacal smell, and a glass rod moistened with weak hydrochloric acid, when passed into the tube is immediately surrounded with a white cloud. The alkaloid appears to be soluble neither in oil of turpentine nor in benzine, but is nearly as soluble in chloroform as narcotine.

PREPARATION.—Cryptopia is contained in the weak spirituous washings of crude precipitated morphia, the liquid designated by the French, "*eaux mères alcooliques*."

The first step to be taken is to neutralize the liquid with diluted sulphuric acid, keeping it rather below than above the neutral point; the spirit is then to be recovered by distillation, and the contents of the still washed out with abundance of hot water; the washings and liquid are to be mixed together and filtered, the hot liquid is now to be thrown down with a large excess of caustic lime in the form of a milk; the liquid is next to be filtered away, and the precipitate thoroughly washed,—the washed matter, more or less loose or pitchy, is the source of cryptopia. The very compound matter thus obtained is to be boiled up with rectified spirit in large quantity, and the spirituous solution filtered; the filtered solution is then distilled to recover the spirit. After the spirit has been removed, the contents of the still are found to be a watery liquid, and a solid matter of a pitchy consistence. The watery liquid is then removed, and the pitchy matter, which is principally composed of thebaia, is

next to be heated to ebullition with enough of rectified spirit to dissolve the substance. The solution having been put aside will be found by the following day to have crystallized, turning the liquid into a soft solid, in consequence of the abundant crystallization of thebaia. The mass, after complete crystallization, is to be strongly pressed in a cloth, and the solid cake powdered and dissolved in muriatic acid very much diluted; care being taken not to go beyond the neutral point. The filtered liquid is then to be evaporated so as to obtain a crystallization of muriate of thebaia; the mother liquid, separated from the first crop of crystals, is further carefully evaporated, at a heat not too strong, for a second crop of crystals of muriate of thebaia; and if everything has been properly done, after the muriate of thebaia has crystallized, in the course of some weeks the muriate of cryptopia will make its appearance, and may be readily recognized by the characters already detailed, and which cannot allow of its being mistaken for muriate of thebaia. When the new body has fully separated in a crystalline form, it becomes a question how it is to be obtained apart; for, although it appears to be very abundant, yet from its extreme lightness and tenuity it is exceedingly small in quantity. The crystallizations of the muriate of thebaia and the muriate of cryptopia, not being separated by an abrupt line of division, but the one shading into the other, the separation of the new body is not by any means easy.

The first quantity of the salt obtained by us, and the alkaloid from that salt, which, through the kindness of Mr. Brady of Newcastle, we had the honor of submitting to the first meeting of the Pharmaceutical Conference of Bath, was obtained by a tedious operation of careful floating off and re-crystallization.

When the substance had been obtained as pure as possible in this way, it was found, on pure sulphuric acid being added, to give a purple color, thus showing it not to be a salt of thebaia, but in all likelihood to be rather characteristic of a new substance belonging to opium. Afterwards, however, on boiling the precipitate produced, by the addition of ammonia to its solution, with strong rectified spirit, a crystallization was deposited on the sides of the glass, which, with strong vitriol, gave a deep blue color with a tinge of violet; while, on the other hand, the mother

liquid gave an alkali which, with strong sulphuric acid, gave at once the deep blood-red color characterizing thebaia. The salt which had given the purple color had therefore been a mixture of the two salts, of the muriate of thebaia and the muriate of cryptopia, the red and blue of the mixed reactions having, of course, given a purple. It is our belief that the salt, as obtained from the mother liquid of muriate of thebaia, is a chemical compound of the two salts; nor does this belief seem unreasonable, for, on making the muriate of cryptopia with the pure alkaloid, we have never been able, by repeated crystallization, to get it in such a state as to give other than a blue color with sulphuric acid, nor to produce crystals at all similar to those in question. It soon became quite clear to us, that in order to obtain the new substance in a quantity sufficient to enable us to investigate its nature more closely, it would be necessary to devise some better method than the one explained. This was the plan we adopted. The hard pressed cakes of the last crystallization of a number of preparations of muriate of thebaia were dissolved in as small a quantity of boiling water as possible, and the liquid filtered hot. On cooling, we found the liquid to have crystallized, not in hard stony crystals like those of muriate of thebaia, but in a softer state, and generally in cauliflower-like masses. The whole was then subjected to strong pressure, and a portion of the solid cake, after being dried and powdered, we boiled with rectified spirits in the proportion of one to five. The liquid we filtered hot; and the mother liquid, after perfect crystallization (the full quantity of liquid being kept up by the spirituous washings of the crystals of muriate of thebaia obtained by previous crystallization), we again boiled with the same quantity of the crystalline cake as before. These operations we repeated as long as the crystals yielded gave an unmixed hard crystallization; but by-and-by, perhaps after six or seven crystallizations, the muriate of cryptopia accumulating more and more, we found that a whiter crystallization, in soft tufts, formed on the surface of the hard mineral-like muriate of thebaia. Whenever this appearance presented itself the mother liquid was poured off into an open vessel, and as the spirit evaporated the whole liquid set into a soft mass. (This takes place spontaneously, sometimes when

stirred.) Next day we threw the soft mass upon a cloth and pressed out the liquid. The cake left was almost pure muriate of cryptopia.

The salt can be very easily rendered colorless, by crystallization and a small quantity of pure animal charcoal. It is not unworthy of remark, that the bleaching effect of charcoal is much more marked in the case of the salts of cryptopia than in those of the other alkaloids of opium.

There is no difficulty in knowing if the salt obtained is mixed with thebaia. If the minutest particle gives a blue color with sulphuric acid, it is pure; but if it give the least tinge of purple, it still contains thebaia. To obtain the pure alkaloid it must be precipitated from its watery solution by ammonia, and the precipitate, after washing and drying, is to be washed freely with ether or spirit, either of which dissolves the thebaia readily, but has little action on the cryptopia.

The crystallized alkaloid is prepared by boiling the precipitated alkali in rectified spirit, and, as its solubility in spirit is very small, a large quantity of spirit must be used. The alkaloid crystallizes after cooling, and on being allowed to remain undisturbed for some time. The crystals, which are partly separated on the sides,—partly, and in greatest quantity, at the bottom,—are very minute, but by the aid of a powerful magnifying glass are found to be composed, especially on the sides of the glass, of beautiful groups of transparent six-sided prisms. The crystals given by twenty ounces of rectified spirit, saturated at a boiling heat, do not weigh more than sixty grains; and a thousand water grain measures of the spirituous mother liquid, after complete crystallization, only give, on evaporation, a weight of 0.79 grains, so that cryptopia requires the large quantity of 1265 parts of cold rectified spirit for solution.

The quantity of cryptopia yielded by opium is very small indeed: we have only got, altogether, since it first came under our notice, about five ounces, in the form of muriate; and to obtain that quantity not less than four or five tons of opium have been operated upon; we do not suppose the whole of the cryptopia contained in the opium to have been obtained by us; but still there can be little doubt that the new alkali is, of all the con-

stituents of opium, the smallest in quantity. An observation made by us quite recently shows, although we cannot say to what extent, that the quantity obtained does not show the full proportion existing in opium. It occurred to us that, as the cryptopia had been obtained from the thebaia crystallized from spirit, the spirituous mother liquid, which had been pressed out, ought to be a source of cryptopia; and an examination of a quantity of this liquid, which had been lying aside for some years, completely confirmed our idea. That liquid we found to have become quite gelatinous; and from our acquaintance with the peculiar character of the tendency of the salts of cryptopia to gelatinize, we were led to examine more closely the gelatinous mass. A Stanhope lens showed it to be composed of an infinity of minute crystalline needles. It was exceedingly difficult to separate the crystals, and we only succeeded by a slow filtration of some weeks, and at last by cautious pressure by means of a cloth. When the pressed and powdered mass had been boiled with rectified spirit, a crystallization was obtained from the filtered spirit. On washing the crystals two or three times with a little cold spirit, and then drying them, the blue reaction with strong sulphuric acid at once proved the crystals to be really cryptopia;* and the proof was strengthened by neutralizing the crystals with very dilute muriatic acid, when the characteristic jelly was formed by evaporation and cooling.

Cryptopia, being a strong alkali, cannot be mistaken for the principles of opium of an acid nature, such as meconic and thebolactic acids; nor for those that are neutral or of weak alkaline properties, such as meconine, narceine, narcotine, and papaverine; the other principles of opium, viz., morphia, codeia, and thebaia, are strong alkalies, neutralizing the strongest acids. As cryptopia possesses this character of strong alkalinity, in common with the three principles last mentioned, nothing more will be necessary than to contrast its other characters with theirs, to find to what extent these characters separate it from them, and

* We are not quite in a position to affirm that the cryptopia obtained from the pressed crystalline cake had been given by the crystals seen by aid of the lens, or by something else that had existed side by side with them: we intend trying to determine this point, and hope to succeed.

give it a right to be considered a substance not hitherto known to exist in opium.

The very sparing solubility of cryptopia in spirit separates it widely even from morphia, the least soluble of the other alkaloids in that medium. The insolubility of cryptopia in ether does not distinguish it from morphia, but does so completely both from codeia and thebaia.

The action of strong sulphuric acid (pure) on cryptopia cannot allow of its being confounded with any of the other three. This acid produces a blue color with the most minute quantity of cryptopia; a blood-red with thebaia; and no color with either morphia or codeia.

The salts of cryptopia have a great tendency to give jellies on cooling from hot solutions. None of the others show this tendency. The muriate of cryptopia crystallizes in tufts, but of a different kind from those of muriate of morphia and muriate of codeia; while the muriate of thebaia crystallizes in hard, stony-like crystals. Again, the muriate of cryptopia is much more easily bleached with charcoal than either of the other muriates.

It appears to us unnecessary to carry the comparison further; we think we have said enough to show a difference of characters so distinct as to prevent the chance of cryptopia being confounded with any of the other principles of opium.

It is already known that a blue color is produced by the action of vitriol on papaverine, but the shade of blue is far more faint, and passes into an orange on the addition of a minute particle of powdered nitre. By the same addition to the blue of cryptopia green is produced. A faint green can also be produced by the addition of nitre to the blue of papaverine; but it is very faint, and requires careful management to produce it.*

* The rationale of the production of the green color is easily comprehended. Sulphuric acid producing a blue and nitric acid an orange-yellow; when the two reactions are applied consecutively to one and the same quantity of cryptopia, the compound result is the production of a green color; and as the action of nitric acid is more powerful than that of sulphuric acid, if the quantity of nitre added should be more than sufficient, the yellow would so predominate as to overwhelm the blue reaction of the sulphuric acid; in this case, however, we never failed in bringing

If the color reactions were the only means of distinguishing cryptopia and papaverine from each other, they might be mistaken, the one for the other; but differing so much as has been shown in other respects, such a mistake is quite impossible.

As there is some analogy between cryptopia and the substance occasionally found in opium by Pelletier, and named by him pseudo-morphia, it appears to us right to point out a few features in which they differ so much as to show them to be quite distinct substances. They are both very insoluble in alcohol and in ether: in this respect they are analogous, but hardly so in any other; for instance, the pseudo-morphia separates from an acid liquid, while in such a case cryptopia could not separate.

Pseudo-morphia is insoluble in ammonia, but very soluble in caustic fixed alkalies; cryptopia, although insoluble in ammonia, is equally so in caustic mineral alkalies.

Diluted acids favor a little the solution of pseudo-morphia, but there are marked differences in this respect, sulphuric and nitric acids dissolving very little, muriatic acid sensibly more, and acetic acid much more. Cryptopia dissolves readily in any one of these acids.

Concentrated sulphuric acid turns pseudo-morphia strongly brown, and then decomposes it. Cryptopia is turned blue by the same agent, and so far from being thus decomposed, if the vessel used for the reaction be left exposed to the air, the color disappears by dilution of the acid, through attraction of moisture. If the liquid, next day, be poured off, and a fresh quantity of strong acid again added, the blue color is reproduced; and the same result may be brought out three or four times successively, the blue, of course, becoming more and more faint each time.*

Concentrated nitric acid turns pseudo-morphia red, passing into yellow, exactly as in the case of morphia. Cryptopia is colored yellowish-orange, and the color does not change.

out the green by the addition of a minute quantity of cryptopia to the yellow liquid. The green is of a deep grass shade, and has a remarkable resemblance to that which is observed on heating meconine with slightly diluted sulphuric acid, and which is so highly characteristic of that substance.

*After the coloring action of vitriol on cryptopia has been exhausted, it will be found by calculation to have been really enormous.

Pseudo-morphia, like morphia itself, becomes of an intense blue with salts of the peroxide of iron, particularly with the perchloride. When cryptopia is submitted to the same reaction, it shows no change.

Through the kindness of our friend Dr. Cook, Demonstrator of Chemistry, King's College, we are enabled to subjoin the following analytical results:—

ANALYSIS OF CRYPTOPIA.

$$C = 12. \quad O = 16.$$

The alkaloid, dried first under the air-pump for some hours, and then in a water-bath kept at a temperature of 212° F., lost no weight.

I. 3.25 grs., burnt with oxide of copper, with a layer of metallic copper turnings in front, gave 8.33 CO_2 and 1.98 H_2O , equal to 70.00 per cent. C and 6.77 per cent. H.

II. 4.7 grs., burnt in the same manner, gave 12.08 CO_2 , and 2.88 H_2O , equal to 70.2 per cent. C and 6.8 per cent. H.

III. 5.32 grs., burnt in a similar manner, gave 13.56 CO_2 and 3.15 H_2O , equal to 69.5 per cent. C and 6.76 H.

IV. 5.45 grs. alkaloid, when burnt with soda-lime, and the ammonia absorbed by standard acid, which contained 20.96 grs. SO_3 per 1000 fluid measures, were found to have neutralized an amount of acid equal to 28 measures = .2054 N = 3.77 per cent. N.

V. 5.9 grs., treated in a similar manner, were found to have neutralized acid equal to 30 measures = .22 N = 3.73 per ct. N.

The above figures indicate the formula $(C_{23}H_{25}NO_5)$.

	Theory.		Experiments.				
	Eq.	Per ct.	I.	II.	III.	IV.	V.
C_{23}	276	70.00	70.00	70.20	69.5		
H_{25}	25	6.33	6.77	6.8	6.76		
N	14	3.50				3.77	3.73
O_5	80	20.17					
	<hr/>	<hr/>					
	395	100.00					

[The chlorides and platinum salt have the following composition :

Bichloride, $C_{23}H_{25}N O_5 \cdot 2H Cl + 6H_2O$.

Chloride, $C_{23}H_{25}NO_5$, $HCl + 5H_2O$.

Platinum salt, $(C_{23}H_{25}NO_5, HCl)_2PtCl_4$.

Mr. Brady, of Newcastle, writes in regard to the crystalline forms assumed by cryptopia :]

"The alkaloid itself has much better defined crystalline forms than any of its compounds. Its primary form is a hexagonal prism, and it is obtained in this condition if crystallized slowly in a tube from its alcoholic solution. But if a warm alcoholic solution be allowed to evaporate on a slip of glass, it takes the shape of very thin hexagonal plates, the minute crystals resembling uric-acid lozenges."—*Lond. Pharm. Journ.*, April and June, 1867.

ON THE SUBLIMATION OF THE ALKALOIDS.

BY WILLIAM A. GUY, M.D., F.R.S., F.R.C.P.,

Professor of Forensic Medicine, King's College, London, etc.

In the year 1864, Dr. A. Helwig, of Mayence, first proposed the sublimation of the alkaloids as a test and diagnostic,* and more recently (in 1865 †) he published a work in large 8vo, of which the greater part is devoted to the tests for the poisonous alkaloids—morphia, strychnia, brucia, veratria, atropia, aconitine, solanine, digitaline, conia and nicotia. In the case of the fixed alkaloids, the results of sublimation and the reactions of the sublimate are minutely described. The work contains carefully-prepared tables of the reactions, and is enriched by no less than sixty-four micro-photographs, of which thirty-eight represent the crystalline forms of the alkaloids and their salts with various reagents, and fourteen are devoted to sublimate and their reactions.

Dr. Helwig states that the idea of submitting the alkaloids to sublimation first suggested itself to him as a natural extension

* Fresenius's "Vierteljahrsschrift für analytische Chemie," 1864, 1.

† "Das Mikroskop in der Toxikologie. Beiträge zur mikroskopischen und mikrochemischen Diagnostik der wichtigsten Metall- und Pflanzengifte, für Gerichtsärzte, gerichtliche Chemiker und Pharmaceuten, mit einem Atlas photographirter mikroskopischer Präparate. Von Dr. A. Helwig, pract. Artze und Grossherzoglich-Hessischem Kreiswundarzte in Mainz." 1865.

of a method so successful in detecting and identifying minute quantities of arsenious acid and corrosive sublimate; and he lays claim to originality, inasmuch as he does not find the sublimation of the alkaloids described in any handbook of chemistry or forensic medicine, even the most recent. This claim to originality is, I believe, fully justified, though probably every manufacturing chemist must have recognized the fact that some, at least, of the alkaloids are sublimed by heat, and experimenters on the small scale must have observed that the alkaloids, as a class, after melting, and before depositing carbon, give out a more or less dense vapor or smoke, which, if allowed to settle on a cool surface, might possibly present, under the microscope, characteristic appearances.

This new application of the test of sublimation suggested itself to Dr. Helwig after becoming acquainted with the simple methods of obtaining sublimates of arsenic and mercury on flat surfaces, with a view to microscopic and chemical examination, which I proposed in the year 1858.* His own method of procedure with the alkaloids is as follows:—In a piece of platinum foil of moderate thickness, a small cup-like hollow is formed; in this a minute quantity of the alkaloid is placed, and over it a microscopic slide (*Objectträger*). This simple apparatus being placed on a suitable support, the flame of a spirit-lamp is cautiously applied until the alkaloid melts, from which point of time the sublimate begins to form on the glass slide.

Now, this mode of procedure is obviously open to objection. The successive changes that take place in the alkaloid—the discoloration, the liquefaction, the deposit of carbon, either on the spot (as happens with some alkaloids) or over a wide surface traversed by the liquid (as in the case with others)—cannot be distinctly seen, and some diagnostic marks of the alkaloids as a class, and among themselves, are thus lost. Nor, again, can the formation of the sublimate itself be seen and watched, as it

* On the Production and Identification of Crystals of Arsenious Acid and Crusts of Metallic Arsenic," (Beale's "Archives of Medicine," No. iii., 1858;) also "On the Microscopic Characters of the Crystals of Arsenious Acid," ("Journal of the Microscopic Society, 1861," and "Principles of Forensic Medicine," 2d edit., 1861, p. 372.)

should be, if we would obtain satisfactory results. There is also some risk in this sudden mode of applying heat, of causing the glass, which should receive the sublimate, to break.

The method of procedure to which I should give the preference is the following:—Provide small crucible covers or slabs, or fragments of white porcelain, a few microscopic cell-glasses, with a thickness of about one-eighth of an inch, and a diameter of circle of about two-thirds of an inch, and disks of window-glass about the size of a shilling. Place the porcelain slab on the ring of a retort-holder or other convenient support, then the glass cell, and upon the porcelain, in the centre of the cell, a minute portion of the alkaloid or other white powder, or crystal reduced to powder. Then pass the clean glass disk through the flame of the spirit-lamp till the moisture is driven off, and adjust it with the forceps over the glass ring. Now apply the flame of the spirit-lamp to the porcelain, underneath the powder or crystal, and continue the heat till the powder undergoes its characteristic change and gives off vapor. Watch the deposit of this vapor on the glass disk, and remove the spirit-lamp either directly or after a short interval, as experience may determine.

These are my reasons for recommending this mode of procedure in preference to that advocated by Dr. Helwig:—By employing a flat white slab of porcelain, the heat of the lamp is applied gradually, and every change of consistence, color and position which the powder undergoes is easily observed. The ring of glass, as compared with a ring of metal, has the advantage of conducting the heat from the surface of the porcelain to the glass disk so slowly as to guard effectually against the danger of breaking, and if the powder, after melting, changes its place, the glass ring, with the disk upon it, is easily shifted. The disk of window-glass is very convenient both for the experiment itself and for the subsequent application of liquid tests. It will also bear a moderate heat, if required. The disks, however, are not essential; their chief recommendation is the facility they afford of multiplying experiments. The common glass slide, or a slip of window-glass, (as being less liable to scratch, and bearing heat better than plate-glass,) may be substituted

When only a few experiments are intended to be made.* An oblong slab of wood, somewhat larger than the microscopic slide, with a circular aperture and ledge to support the glass disk, enable us to examine the sublimate under the microscope, and a similar piece of thick cardboard, with a hole punched in the centre of it, serves for the mounting of the preparation.†

By this mode of procedure I have obtained sublimates of veratria and solanine, which correspond closely with the descriptions and photographs given by Helwig; but, in the case of strychnia and morphia, I have got very distinct and extremely beautiful crystalline sublimates (not exceptional, but as the rule,) where he has failed;‡ and though I am not yet prepared to assert positively that the strychnia and morphia sublimates can always be distinguished by their crystalline forms alone, I am able to correct the statements contained in the following passages:—

“It (the sublimate of morphia) consists of perfectly homogeneous spots of round, very sharply-defined granules, closely packed together, which, when magnified a hundred and sixty times, are transparent, but among which no trace of a crystalline formation can be discovered, (p. 9);” and “Examined microscopically, a sublimate of strychnia is not to be distinguished from a sublimate of morphia; precisely the same spots of round transparent granules, without trace of crystalline formation (p. 21).”

My object, in the present communication, is to draw attention to a new method of procedure, which, even if it should fail to realize the sanguine expectations of Dr. Helwig, will certainly

* As the disks of glass can only be conveniently cut by a revolving diamond, which few glaziers possess, it may be well to mention that they may be procured of Mr. Eade, 130 High Holborn, at a cost of two shillings the gross.

† When dealing with larger quantities (such as a grain or more) of the alkaloids, the short specimen tube may be substituted for the porcelain and microscopic cell-glass. But the results are far from satisfactory; and it would certainly be better to sublime successive small portions of a hundredth of a grain or less from the porcelain.

‡ I have also obtained very fine crystalline sublimates from the new alkaloid Cryptopia.

deserve and receive the attention of the micro-chemist and microscopist, on account of the simplicity and delicacy of the process, and the beauty of the results which it yields, directly in the sublimates themselves, and remotely in the effect of reagents upon them. The few specimens of the sublimates of strychnia, morphia, solanine and cryptopia, and of their reactions, which were shown at the late *soirée* of the Pharmaceutical Society, will, I think, justify this expectation.

I hope to be able to resume this subject on an early occasion, and to indicate more precisely the advantages which we may expect to derive from the use of this method.—*Lond. Pharm. Jour.*, June, 1867.

CHOLERA AND ITS PREVENTION.

The probability of the re-appearance and spread of cholera in this country during the present year seems to be rapidly gaining credit among those who are familiar with its former history and progress. Its prevalence in Germany, in the spring and summer of 1866, was limited to a very few districts, and it made but little impression in the chief centres of population—London, Paris or Vienna—yet it found its way to New York and other American cities, and suddenly struck down several thousand human beings, and was only arrested by the adoption of the strictest sanitary measures, prominent among which was the free use of disinfectants. In the autumn it seemed to wholly disappear, and gave us hope of its entire eradication. Since then, however, it has spread widely over a large portion of Europe—especially France, England, Germany and Italy. During the winter it was reproduced in Greece and Turkey, where it made its first appearance last year. In England hardly a case occurred during the past summer, yet in Liverpool 1700 deaths from cholera were reported after the cold fall weather set in, besides 1000 from diarrhoea and similar maladies. In December last, too, eight vessels arrived at the port of New York with cholera on board.

These facts are significant, and show that summer is not the only season when cholera may prevail, although it is usually

more active then ; but even the coldest weather is not a complete check to its growth and advancement.

And the premonitions to which we have already adverted, that have been occurring in many parts of our own and in other countries during the past six months, all go to demonstrate that the disease has not yet been "stamped out," and is liable to recur on the slightest provocation. We may therefore safely assume that we are liable to a return of the disease this summer and fall, both by importation and domestic origin, for neither our great cities nor the country at large can be said to be in a condition less favorable to its prevalence than heretofore, and we know with what virulence it has broken out at various points throughout the country within the past year.

It becomes, therefore, the solemn duty of every individual, especially those on whom rest the responsibility for the sanitary condition of dwellings, hotels, schools, factories, workshops, prisons, hospitals, ships and other vessels, and all places where crowds of people assemble, to see to the adoption of measures best calculated to prevent another visitation of cholera or of any other malady that may be brought on or increased by the foul emanations in filthy and crowded localities.

In the *Reporter* for June 15th, we called attention to the progress made of late years in the control of cholera and other diseases. Prominent among the means employed for this purpose, we mentioned the use of disinfectants, and quoted from a letter of Dr. Elisha Harris to the President of the Metropolitan Board of Health, in which he spoke of their great importance, and mentioned some of the most prominent disinfectants hitherto in use. We shall also soon give a classified list of these, with directions for their proper application. The difficulty with these disinfectants, however, is their costliness. This has prevented their coming into *common use*. To be practically useful to the people, a disinfectant should be *cheap* as well as *good*. A laboring man should be able to go to a drug or grocery store and, for a few pennies, buy a pound of disinfectant that will neutralize foul emanations, and not merely substitute one bad smell for another.

We have heretofore, on two or three occasions, called atten-

tion to disinfectants that were sold at moderate prices, but we have lately become cognizant of a compound which possesses all the requisites of a good disinfectant, which can be sold at less than half the price of any other that has been offered to the public. It is called "The Thorough Disinfectant," and we are glad to learn that some prominent physicians and sanitarians of New York, where the inventor of the compound resides, are engaged in the laudable effort of having the formula disseminated throughout the country in a way to make it available for the purpose of a general, reliable, and, at the same time, cheap disinfectant.

As we are assured that the ingredients for its composition can be obtained in almost every locality, and at a mere tithe of the cost of other disinfectants of even less value, it is to be hoped that it will not be long ere the formula will be scattered broadcast over the land, in a way the best calculated to make the use of the "Thorough Disinfectant" universal.

Some knowledge of its ingredients and wonderful antiseptic properties, and observation of its effects, have given us a very high opinion of its value, and will lead us to do what we can to promote the introduction of this excellent article, in the belief that it will add to the comfort and elevate the sanitary condition of our households and the community generally, when it comes to be fully known.

Cholera and some other forms of zymotic diseases can be much more easily prevented than cured, and anything that will neutralize foul animal effluvia, the chief promoter of this class of diseases, is well worthy of being extensively known and used.—*Med. and Surg. Rep.*, July 6, 1867.

A FEW REMARKS UPON THE USE OF HEROIC DOSES OF STRYCHNIA IN CHRONIC DIARRHŒA, DURING THE YEARS 1862-63-64-65, IN THE UNITED STATES SERVICE.

By R. P. KENDALL, M. D., Hamilton, Ills.

In June, 1862, the 15th Wisconsin left Island Ten, leaving behind them over two dozen bad cases of chronic diarrhœa. Sufficient hospital accommodations did not then exist at Columbus, Ky., and Cairo, Ills., and it was thought that they would do as

well in good tents with sufficient attention. I had occasionally used strychnia before, both alone and in combination with hypnotics and tonics, but in the usual small doses, with decidedly good results. I now commenced increasing the dose to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, and in one case $\frac{5}{8}$ of a grain. The strychnia was that furnished the United States by Reed, of Chicago. The following is the formula :

- R. Strychniæ,
Morph. sul., aa gr. $\frac{1}{4}$,
Arg. Nit.,
Ext. Belladonnæ, aa gr. $\frac{1}{2}$,
Ext. Gentianæ, q. s. ut. f. pil.
- R. Strychniæ, gr. ss.,
Morph. sul., gr. $\frac{1}{4}$,
Arg. Nit. gr. ss.,
Ext. Belladonnæ, gr. $\frac{1}{2}$, m. f. pil.
- R. Strychniæ, gr. $\frac{3}{4}$,
Morph. Sulph.,
Ext. Belladonnæ, aa gr. $\frac{1}{2}$, m. f. pil.

The specific effects of the strychnia did not manifest itself until half grain doses were reached. The larger doses were never given oftener than once a day (24 hours).

In the case where $\frac{5}{8}$ were given, the patients had no discharge for twelve hours. The specific effects were quite violent for two hours—commencing in twenty minutes after exhibition. The patients were advised of the nature of the pills before commencing their use. The result was very decidedly good in every case but one. He died at Columbus, three months after. The time for establishing convalescence was variable. In the case of the patient who took $\frac{5}{8}$, convalescence was established within five days. In nearly all the cases, after cure commenced, recourse was had to the smaller doses, once every six, eight or twelve hours, according to the requirements of the case. The variations in the formula were made with a view to determine their comparative value. All were satisfactory; but those containing arg. nit. were considered more decided and permanent in effect.

The combination of morphia and belladonna can be carried to

an extremely large amount of each, producing a powerfully tranquilizing effect, without even, in some cases, causing sleep.

The strychnia was also used in substance to the extent of $\frac{1}{4}$ and $\frac{1}{3}$ grain doses while I was surgeon of the 11th U. S. C. I., at Memphis, in 1864-65. The effect was good, but not so permanent as the pill formula.

I will here relate a singular phenomenon. Nearly all cases of chronic diarrhoea amongst the Southern blacks terminated, after a lingering illness, fatally. Nearly all cases among those from Missouri, Kentucky and Northern Tennessee terminated in complete cure. * * * * * I have never seen a case of cholera since I was a student in 1862-63, but propose to use some such treatment as already mentioned should it visit this vicinity. Discussion in reference to changes in the ganglionic system by disease and medication, I forbear. I only state a few facts.—*Cincinnati Lancet and Observer*, May, 1867.

ON THE SEPARATION OF TIN AND ARSENIC.

By PROFESSOR WÖHLER.

This method is based upon the solubility of sulphide of arsenic in bisulphite of potash, which does not dissolve sulphide of tin. The mass, oxidized by nitric acid, is allowed to digest with sulphur and caustic potash till solution is complete, (or till the formation of a metallic oxysulphide, which is separated by filtration). The liquid, treated by excess of sulphurous acid, is allowed to rest for some time, and is then evaporated till two-thirds of the water and all the sulphurous acid have gone off. Filter off the sulphide of tin, and wash it, not with water, which must not be used here, but with a concentrated solution of chloride of sodium. This may be removed from the precipitate by means of a slightly acid solution of acetate of ammonia, but the liquor so obtained must not be added to the washing waters charged with salt. The sulphide of tin, when dried, may be converted into oxide of tin by roasting in contact with air. The arsenic which the liquid contains in the state of arsenious acid may be precipitated by a current of sulphuretted hydrogen.—*Lond. Chem. News*, June 14, 1867.

CARMEL COLORS.

To the Editor of the *Chemical News*.

SIR:—Under the "Notes and Queries" in your valuable paper, (No. 387,) I happen to find one concerning caramel. Perhaps the following may be of use to your correspondent:—

The manufacture of caramel (coffee finings, as it is often termed in London,) is kept a secret on this account, that neither coffee-roasters, nor dealers in groceries, nor brewers, may have, or at least are presumed not to have, any in their possession—the Excise prohibiting it. Here in London it is made by roasting sugar of coarse description in cylinders similar to those used for roasting coffee, chicory and cocoa; this yields a very inferior preparation both for coloring as well as admixture with coffee. So prepared, it contains assamar and other pyrogenetic products which are very bitter. On the continent apples of inferior description are treated as described, yielding a product superior to that obtained from sugar. Sugar, however, is the only fit material to prepare caramel, and for this purpose the sugar is best heated in capacious roomy vessels made of copper, (in Vienna copper lined with silver is preferred,) the vessel containing the sugar being placed in an oil bath* containing a thermometer to indicate the temperature. The latter must not be below 410° nor above 428° Fahr. The heating of the sugar is continued as long as aqueous vapors are given off. The crude caramel so obtained is best purified by being placed upon a parchment paper dialyser, which is placed on water. The undecomposed sugar and intermediate compounds are thus got rid of; they dissolve out with facility, and what remains on the filter is, weight for weight, five times as strong in coloring matter as the crude caramel. While the sugar is being exposed to heat, it is preferable to stir it with a spatula.

Another mode of obtaining a pure caramel, free from bitter produce, assamar and the like,) is to heat the sugar as above, and to treat the powdered caramel with alcohol, (pure methylated spirits,) to digest it for three to four hours therewith, and repeat

* A mixture of tin and lead is sometimes used, just made so as to remain fluid at from 412° to 430° Fahr.; some bismuth is added.

this till all bitter taste is gone. An aqueous solution containing 10 per cent. of purified caramel is gummy, and forms a jelly. When a solution of caramel in water is evaporated *in vacuo*, (small vacuum pan as used in sugar refineries,) it dries up to a black shining mass, freely soluble again in water, hot or cold; but if the solution is evaporated on a water-bath to dryness in contact with air, the whole mass becomes insoluble in water either hot or cold.

A very small proportion of caramel gives to a large bulk of water the dark brown tinge known as sepia. An impure but pretty strong solution of crude caramel (*i. e.*, not purified by dialysis or alcohol—hence the term impure for the solution) is sold in London, under the name of Coffeena, in small bottles at 1s. per bottle, to be had in many oil and color shops in the metropolis; it is used in teaspoonfuls to improve coffee, dispensed with chicory.

I am, &c.,

A. ADRIANA.

London, May 7.

P.S.—Treacle is not very manageable to use for making of caramel. The sugars should be first dried at 212° Fahr. On the Continent dry glucose is sometimes used instead of cane or beet-root sugar for the purpose of making caramel.—*Lond. Chem. News*, May 17, 1867.

NOTES ON THALLIUM AND MAGNESIUM ALLOYS.

By S. MELLOR, Esq.,

Manager of the Magnesium Metal Company.

It having been suggested that if an alloy of thallium and magnesium could be easily made into wire, it might be found to burn readily, and to produce an intense bright green flame, which, from its portability, would be well adapted to some of the purposes for which a green flame is required, some experiments have been made with this end in view.

It was found that thallium alloys most readily with magnesium, and in any proportions. The alloys are very stable, and are easily worked up into wire and ribbon. Alloys containing 5, 10, 15, 20, 25 and 50 per cent. of thallium were prepared.

These all burn brightly and steadily, but the flame is smaller and the combustion slower than that of pure magnesium. The flame is cold, and the heat-conducting property of the alloy, compared with magnesium, is sensibly diminished, showing the change in the molecular construction of the metal. The smoke produced in the combustion of these alloys is more dense, and, as it curls gracefully away, it is seen to be fringed with a rather pretty dark purple tint; but the magnesium light is so very intense that it almost completely masks the thallium flame, so that it is not observable in some of the alloys—indeed, the green light is scarcely recognizable even in an alloy containing 50 per cent. of thallium.

An alloy of 5 per cent. of thallium appears to render magnesium less brittle and more ductile than pure magnesium is usually produced; but the higher alloys of thallium, say those containing 25 and 50 per cent. of thallium, are more oxidizable than pure magnesium.

The metals were put together cold in a closed iron crucible; only a slow heat was required to melt them.—*Lond. Chem. News*, May 17, 1867.

CONSOLIDATED COAL DUST.

Many attempts have been made from time to time to utilize that material known as coal-waste, which in our mining region has been thrown aside until the waste heaps, so accumulated, have threatened to rival in extent and elevation the natural mountains among which they find themselves. Such attempts have as yet, to the best of our knowledge, proved unsuccessful in a commercial point of view, in this country, though a very different result has been obtained abroad. Thus, in an article by M. L. Gruner, Ingénieur en Chef des Mines, which appeared in the October number of the *Bulletin de la Société d'Encouragement pour l'Industrie Nationale*, it is stated that in France some twenty establishments are carrying on this manufacture, and produce yearly 500,000 tons; in Belgium some seven manufacturers turn out 400,000 tons, while in other countries the product, though less, is very considerable.

We have not before us the data which would render possible such a comparison as might explain the very different success attained in this country and abroad, but we know that in some cases the fault lay in the costly nature of the machinery employed, and in other cases it was to be found in the friable nature of the product obtained, which rendered its transportation troublesome and expensive. We have now before us specimens of consolidated coal-dust, labelled "Gerard fuel," and remarkable for several peculiarities, which makes us think that the process by which they are produced will not share the fate of its American predecessors. These specimens are cubical, some of them measuring about 1.5 inch on each edge, others about four inches. They may be thrown violently on the floor without sensible injury, and are thus proved to possess all requisite consistency, while their process of manufacture, which we shall proceed to describe, looks well in other respects. The coal-waste is carefully screened, by which means it is stated that 30 per cent. of good coal may be secured. The finer particles are then crushed between rollers of chilled iron, and are then mixed in a machine, much like that used for tempering clay with coal tar, steam being also admitted and flour added, according to the patent, but not found to be important in practice. From the mixer, the hot, wet, tarry dust passes into the moulder, where plungers force it into moulds with movable ends; so that, when each block has been formed, the end is raised, and a second and further push of the plunger throws out the finished cube. The cubes so formed are packed closely in iron boxes, and run into an oven, where they are heated to a temperature, which distils off as illuminating gas all the hydrocarbon of the coal tar. From all that has been published abroad on the subject, it seems that experience has demonstrated the efficiency of the following points of treatment:—

1st. The thorough pulverization and wet mixing. 2d. The use of coal tar as a cement. 3d. The baking after compression. The process just described involves these points, and certainly produces most excellent results. If, on practical trial, it shall prove to possess the last but all important requisite of economy, it cannot but render the manufacture of artificial fuel here, what

it is abroad, a regular and profitable branch of industry.—
Jour. Frank. Inst., July, 1867.

PREPARING MEAT FOR FOOD.

By ARTHUR HILL HASSALL, M. D., WIMPOLE STREET.

[An English Patent. Dated February 15, 1866.]

This invention has for its objects improvements in the preparation of meat for food. For this purpose the inventor selects the leanest joints or parts of beef, or of any other kind of meat; these he first deprives of all bone, tendon, and visible fat, and the red part or flesh is then cut into pieces of about an inch or so in diameter. These are then passed through a sausage or mincing machine, by the knives of which they are cut into small pieces and minced. The minced meat is then spread in very thin layers upon perforated trays by preference of galvanized iron; this spreading is effected either by hand labor, or it may be by a spreading apparatus attached to the mouth of the sausage machine. The trays when spread are transferred either to a drying closet heated by means of steam, or to a hot-air room or chamber (heated by flues passing through it), in either of which the meat becomes deprived of the greater portion of its water, and assumes a crisp and friable condition. Special care is taken that the meat is dried at a temperature below the coagulating point of albumen. The meat thus dried is then ground in a mill, or under mill-stones of suitable construction, after which it is passed either through sieves or a flour-dressing machine, a very fine "flour of meat" being thus obtained. This powder is now subjected to a further drying process, whereby the whole or nearly the whole of the water of the meat is dissipated. By preference, dry the greater portion, say about two-thirds of the powder, at a temperature below the coagulating point of albumen, and dry the remainder at a high temperature, say at about 160° F.; the two portions are subsequently mixed together. By thus drying a portion of the powder at a higher temperature, a superior flavor is imparted to the powder than if the whole of the powder were dried at a low temperature. For some purposes, however, the whole of the powder may at the second drying be

dried at the low or high temperature; when intended to be used for biscuits at the low temperature, and when for lozenges at the high. Part of the ground meat will not, after the first grinding, be passed through the sieves or dressing machines. This has to be ground a second and even a third time, whereby other quantities of the flour are obtained, but there is still a residue which remains in the sieve. This is of a fibrous character, and consists for the most part of gelatine, and is derived from the membranes or gelatinous portions of the meat. This is ground in a mill suitably adapted for reducing fibre, or is subjected to a temperature much above the coagulating point of albumen, whereby it is rendered more friable, so that it admits of being ground and sieved, the powder being added to the flour of meat previously obtained. Finally, the bones are crushed, and these as well as the tendons are boiled and digested, so as to remove the gelatine contained in them, and which is subsequently recovered in the manner usually practised by gelatine manufacturers, and which, when reduced by grinding and sieving to a fine powder, is added to the flour of meat. Vegetables, such as turnips, carrots, celery, onions, and herbs, are dried also at low temperatures, and for the most part below the coagulating point of albumen, and they are then, like the meat powder itself, ground and passed through fine sieves, a "flour of vegetables" being thus obtained. If the flour of meat is intended to be used for the preparation of beef-tea, add to it a little salt; if intended for soups, add all the requisite vegetables and flavorings prepared as above, and reduced to a fine powder similar to that of the meat itself, so that the cook has nothing more to do but to add the requisite quantity of water, and simmer for a few minutes, when the soup is ready for use. The flour of meat is also suitable for being used in the preparation of a meat cocoa, also in the manufacture of meat biscuits, and also, when mixed with a farinaceous matter, for a food for invalids.

By the above-described method of preparing meat there is obtained a material capable of prolonged preservation; it utilizes the beef or other meat which is usually thrown away in the preparation by the ordinary method of beef-tea, broths, and soups; it also reduces the meat to such a condition that the beef-teas

and soups made with it are infinitely more nourishing than those made in the usual manner; and lastly, it reduces the meat to such a state as that no mastication is required, and it can be readily consumed by persons with defective teeth, and by invalids generally.—*Druggists' Circular*, July, 1867.

ON THE MANUFACTURE OF CARAMEL BROWN.

By THOS. SHERLOCK.

Caramel brown may be prepared in a variety of ways from glucose, molasses, or cane sugar. The following process gives a uniform and perfectly satisfactory article, and after having manufactured large quantities of the color and tried several other processes, I have come to the conclusion that this is the best.

Provide an iron pan capable of holding twenty imperial gallons. Provide also an iron paddle or stirrer, flattened out broad at the end, about four feet long, and made light enough to be handled easily. Have also close at hand three or four gallons of clean boiling water. Set the pan on a ring over a fireplace, and put in half a hundredweight (56 lbs) of good ordinary raw sugar. It is mistaken economy to use the very commonest brown sugar. Light a fire under the pan, and as it burns up stir the sugar about with the paddle. The sugar gradually melts, giving out puffs of vapor, and finally becomes a viscid liquid of a light brown color. This is the first stage in the process. Only a moderate heat is required, and the melting should not be hurried. Now increase the heat gradually, stirring briskly and constantly. The liquid will become thinner and darker in color, and at length begin to boil vigorously and rise up in the pan. The whole secret consists in the management of this part of the process, and minute attention should be paid to the following simple directions. Allow the melted mass to rise up till the pan is half full; then open the fire door, throw water on the fire, and pull it out quickly. This should be done by a second person, the actual operator stirring sharply with the paddle to keep the mass in the pan. If the fire be drawn without first throwing water on it, the contents of the pan will inevitably boil over, and there will be a corresponding loss of product. Continue the stirring till the boiling subsides, and the dark brown mass lies quiet at the bottom of the

pan. If a little be now dropped on to a cold plate or piece of metal, it will solidify to a brittle lump, of a clear rich brown color, showing that the operation has succeeded. All that now remains is to add sufficient water to bring the mass to the desired consistence. The water must be boiling when added, and in very small quantities at a time. There is a considerable rush of steam as the first portions of water are stirred in, and care must be taken in using the paddle to stand clear of the hot particles projected from the pan; but after a few additions of water all this subsides, and the water may be added more freely.

The finished color is usually sent out, either as a stiff paste-like extract, in which condition it is used by saddlers, curriers, &c., for browning certain kinds of leather, or as a syrup more or less thick. In this last form it is used for coloring vinegar, spirits, gravies, and many other liquids, and is well known in the drug trade as "color fuscus." If the stiff form be required, about a gallon of water will be sufficient, and in this case the product should be got out while hot, and put into stone-ware jars, previously heated, and standing on a piece of wood.

Fifty pounds of raw sugar should yield at least sixty pounds of the stiff color, and proportionately more of the thinner kind, and when cold should dissolve readily in water, giving a clear brown solution, without deposit or turpidity.

The causes of failure in the manufacture may be either a deficiency or an excess of heat.

If the heat used be insufficient, some of the sugar remains imperfectly converted, and a muddy dirty-looking product is the result. On the other hand, if the heat used be excessive (strong heat is not required in any part of the process), the mass becomes black, granular, and insoluble in water,—in fact, burnt and useless.—*Chem. News*, June 7, 1867.

A NEW PHOTOGRAPHIC VARNISH FOR PICTURES AND NEGATIVES.

By J. GRASSHOFF.

In order to give albumenized prints a more finished appearance they are sometimes coated with ordinary negative varnish. This treatment is open to several objections. The glossy surface

given to the picture by this varnish is by no means of a delicate character, and requires glazing before it is at all presentable; and the yellowish tint which it leaves on drying frequently gives photographs the appearance of having been insufficiently washed. For these reasons I have adopted the use of a spirit varnish, which I find remarkably suitable. Its cost is very moderate, it does not turn yellow, and it is easy of application,—the latter qualification being very desirable when large numbers of cartes de visite pictures are to be coated. The beauty of the picture is greatly enhanced by the use of this varnish, as it does not bestow too much lustre, and, being applied in very minute quantities, there is no fear of its becoming brittle and liable to peel off when dry.

The method of preparing is as follows:—Five parts of finely powdered gum sandrach are put into a vessel with twenty parts of absolute alcohol, and when the gum has been entirely dissolved by shaking, two parts of Venetian turpentine are added; the mixture is again agitated, and then one and a half parts of oil of lavender or oil of turpentine, and finally one and a half parts of camphor, powdered as fine as possible, are added, and the whole shaken up till completely dissolved, the entire operation being performed in about ten minutes. The varnish should be filtered or allowed to stand for a few days, and then poured off; if it does not give sufficient lustre, a further quantity (from half to one part) of gum sandrach is added.

The varnish is applied to pictures by means of a broad goat's-hair brush, an inch or inch and a half in breadth; it can be laid on very rapidly, and when coating small pictures it is a matter of no importance if the narrow margin of cards is covered with it. A few minutes is sufficient to dry the varnish, which then forms an admirable protection to the picture, especially in any of its defective parts, where it may have been improved and touched up with a brush. It sometimes happens, when the albumenized paper has received but an exceedingly slight coating of albumen, that small spots are formed on the application of the varnish, but these are not visible on a dark ground; should, however, such imperfections occur on vignettéd pictures, the only

means of rectifying the same is to coat the picture with a sizing solution, glaze it, touch out the spots with a brush, and then re-varnish it. With albumenized paper of ordinary quality the formation of these spots very rarely takes place, the coating of albumen being sufficient to resist the penetration of the varnish.

For paintings, either in oil or water colors, this varnish will be found suitable, provided aniline colors have not been used. When these latter colors have been employed, it is better to use dammar or mastic varnish made by dissolving gum dammar or gum mastic in oil of turpentine, although, on account of its soft and sticky character and its liability to become yellow, I can scarcely recommend it.

My spirit varnish answers exceedingly well for coating negatives, and may be applied to them when quite cold. If it does not dry with sufficient rapidity, the negative may be warmed, but this is by no means necessary, and the varnish is to be diluted with alcohol if such a proceeding is adopted.—*Druggist's Circular*, July, 1867.

THE PREPARATIONS OF CONIUM OF THE BRITISH PHARMACOPŒIA, 1864 AND 1867.

BY JOHN HARLEY, M. D., LOND., F. L. S.

(Assistant Physician to King's College Hospital, and to the London Fever Hospital, etc.)

(Continued from p. 367.)

Extractum Conii.—Having completed my examination of the tinctures and succus, I come now to the consideration of the extract. Very few medicines have attained so great a reputation and have been so extensively employed as the extract of hemlock.

Introduced by Störck, in the year 1761, as a remedy of marvellous power in the removal of almost every inveterate disease to which the human frame is subject, it soon obtained admission into the Pharmacopœias; and, regarded as it is by practitioners of the present day as a powerful and useful remedy, it is still retained in almost every one of them. I myself have seen it prescribed almost daily, in doses varying from 1 to 5 grains, for the last twenty years. Nevertheless, it is to be observed that

the efficacy of the extract has been questioned, and several times disproved, from the days of Störck down to our own times.

The following is the formula for the extract, to the agency of which Störck attributed his wonderful cures :—

“ R Herbæ recentis cicutæ, quantum sufficiat. Exprimatur succus, isque recens lentissimo igne in vase terreo (sæpius agitando, ne amburatur) coquatur ad spissi extracti consistentiam, hoc extractum s. q. pulveris foliorum cicutæ in massam pilularem subigatur; ex qua fiant pilulæ granorum duorum.”*

In some cases a few grains, taken daily for two or three weeks, were sufficient to remove, as it appeared, an old-standing disease, while in others the patient swallowed zii of the extract daily for four or five months without inconvenience. “The extract of hemlock,” says Störck, “is a remedy absolutely innocent; it does not hurt the sight, but the contrary.”

The following criticism, by an eminent contemporary of Störck, appears to me very just, and worthy of mention in this place :—

“Quin et incomprehensibile, ac plane paradoxon videtur, id statuisset. Præterquam enim quod nec in meis, nec in *Breslaviensium* pluribus, ea vis cicutæ confirmata fuerit, si consulam auctorem, qua namque dosi, a cicutæ extracto, hanc vim edi putet, video a granis 2 de die observasse eandem et sic porro a granis 4, ab 8, a 12, a 20, 30, 60, 120, 180, 240, idque haud rariore admodum casu sed frequenti.

“Si granum opii consuevit homini blandum conciliare, erunt alii qui indigeant dupla dosi, rariores qui triplo, quadruploque, rarissimi qui quintuplo, qui sextuplo uno die indigeant. Cicutæ autem dosis cur adeo immense augenda fit, ex comparatione cum ceteris paregoricis haud facile capitur.”†

Störck's observations on the use of hemlock excited so much attention that his experiments were repeated in almost every country of Europe, and many of the leading practitioners of those times gave his far-famed extract ample trials. It needed but a short time to convince all observers that Störck had greatly over-estimated its virtues. Not a few, however, were satisfied

* “Essay on the Medicinal Use of Hemlock,” by A. Störck, 1761, p. 14.

† “Epistola de Cicutæ.” Antonius de Haen, 1766, pp. 20, 21.

that it was a remedy of considerable value. Störck, Collin (*a*), Quarin (*b*), F. Hoffmann (*c*), Hill (*d*), Rouppe (*e*), Gataker (*f*), Andrée (*g*), W. Butter (*h*), Akenside (*h*), Spalowski (*i*), Burrows (*j*), have all advocated its use, and given us the result of their observations; but if we carefully examine their writings, we shall fail to recognize any mention of the least trace of those effects which distinguish the action of hemlock. I believe, therefore, that we are fully justified in concluding that the extract, whether prepared in Vienna, Amsterdam, Geneva, Naples, or in London, was practically, if not absolutely destitute of the active principle of the plant. Indeed, the impotency of the drug was occasionally recognized by some of these observers themselves, who attributed it to various causes,—the wrong plant had been used; the locality in which it had been grown, or the situation in which it had been exposed, was unsuitable for the elaboration of its juices; the herb had been gathered a month too soon or too late; the whole of the watery juice of the expressed herb had been used, whereas the first portions should have been rejected and only the latter and more resinous part employed. Dr. Butter, with a more correct appreciation of the real cause, cautions against the employment of too much heat in the preparation of the extract, and gives the following directions for its preparation:—Evaporate the freshly expressed juice in a broad glazed platter over a charcoal fire, and, as soon as green clots form, stir the liquor frequently, keeping it at such a heat as will make them move about without driving them above the surface or occasion-

(*a*) *Observ. circa Morbos Acutos, etc.*, 1765.

(*b*) "Tentamina de Cicuta," 1761.

(*c*) *Observ. on the Internal and External Use of Hemlock*, 1764.

(*d*) Sir J. Hill, "Directions for those Afflicted with Cancers, with account of the Vienna Hemlock," 1771.*

(*e*) *De Morbis Navigantium; acced. de effectu extracti Cicutæ, etc.*, 1764.

(*f*) "Essays on Medical Subjects," 1764.

(*g*) *Obs. on Störck's Treatise*, 1761.

(*h*) "Treatise on Kinkcough, with an Appendix on Hemlock," 1773.

(*i*) "De Cicuta," 1777.

(*j*) *Prac. Essay on Cancers, with method of Administering Hemlock*, 1767.

ing an ebullition. Evaporate with constant stirring till the extract is of sufficient consistence to form pills. Such directions, taken in conjunction with the precaution "*ne amburatur*," given in the previous formula, sufficiently indicate by what agency the powerful juice was reduced to an inert mass. As with the dried leaf, so with the extract, the active principle has departed and a dead inert body alone remains. The above mentioned authors introduce us to scores of patients who are taking the extract of hemlock largely. We look from one to another to discover some evidence—no matter how slight—of its action, but we search in vain; not a trace even of its earliest and most prominent effects are anywhere visible. We can hardly admit that these effects, evanescent though they be, could have been overlooked by such a body of intelligent observers. As scholars, at least, they were acquainted with the observations of Paulus Ægineta, Dioscorides, Plato, Galen, Plinius, respecting the action of hemlock; and, as scientific facts, these observations were repeatedly advanced in the discussions which the treatise of Störck excited in those days.*

Passing by these earlier observers, I find the effects of hemlock practically indicated, for the first time, in the works of Dr. Fothergill. Speaking of a particular patient, he says, "The dose of hemlock (extract) was gradually increased from 20 to 70 grains a day; if he took more, it either made him sickish or created a singular kind of headache and giddiness."† These are, I think, real indications of the presence of hemlock. It must be observed, however, that the extract used by Dr. Fothergill was much more carefully prepared than that used by Störck and his contemporaries,—precautions having been taken both to collect the plant at the proper time, when the active principle is most abundant, and to avoid prolonged exposure of the juice to a high temperature.

A medical friend of Bertrand administered ʒj of carefully

* Bertrand, "*Recueil de Mémoires de Méd., de Chir., et de Pharm. Militaires*," 1ère sér. vol. ix. p. 313.

† De Haen, op. cit. Viventius J., "*De Cicuta*," Naples, 1777, which contains a very complete reference to the observations of the Ancients on the action of Hemlock.

prepared extract, daily for a year, without result.* Dr. Allbutt, of Leeds, informs me that he "has often given the extract, in doses so large as to nauseate by its mere mass, without other results."

It thus appears conclusively that, from the time of its introduction to the present day, the extract has been regarded by many as an uncertain preparation, and it is remarkable that its value has not been long ago more satisfactorily determined. Christison, Geiber, Orfila, Pereira, and others, all concur in the opinion that most of the extract of conium of the shops is inert or nearly so. Pereira states that he was unable to procure any sensible quantity of conia from ziv of the extract.† The observations on the extract are concluded in his work by the following statement, which is accepted, I believe, as a pharmaceutical axiom:—"The goodness of the extract may be determined by the disengagement of a strong odor of conia, when it is gradually triturated with liquor potassæ." This test is so readily applied, and appears at the same time so decisive, that any more elaborate analysis seems superfluous, and yet I venture to assert that no statement can be further from the truth, no test more fallacious. Half an ounce of extract, containing but a fraction of a grain of conia, will, on trituration with caustic potash, speedily evolve a powerful and penetrating odor of conia, and the effect is usually very much heightened by the simultaneous separation of a little ammonia. A great deal too much has been inferred from this reaction, and it is to this cause, I believe, that we have so long remained in a state of uncertainty respecting the virtue of the extract. A given sample has been pronounced good, because, on commixture with caustic potash, it has evolved a strong odor of conia. Attention to the following experiments will show the fallacy of such a conclusion.

I have already proved that the "succus conii" prepared last season by Mr. Buckle, of Gray's Inn Road, possesses in a powerful degree the poisonous properties of hemlock. As many sources of error are by this means eliminated, I am fortunate in being

* Obs. on the Use of Hemlock, John Fothergill, M. D., Works, vol. ii. p. 59.

† Elem. Mat. Med, vol. ii. pt. ii. p. 206.

able to make two extracts, most carefully prepared from this succus, the basis of my investigations. One of these extracts was prepared strictly according to the directions given in the British Pharmacopœia, and contains, therefore, the albumen and chlorophyl of the juice,—this I shall call “ordinary extract.” The other specimen was prepared by the same process, excepting that the coloring matter, separated by exposing the juice to a temperature of 130° F., was altogether rejected. This, therefore, I shall call “extract without chlorophyl.” The evaporation of the juice in both cases was conducted at a temperature of about 160° F.

Ordinary Extract of Conium of the British Pharmacopœia.—The following were the characters of this extract:—smooth, dull olive-green, of a consistence sufficient for forming pills, taste acidulous, free from all bitterness and acidity, but partaking slightly of the nauseous oleo-resin of the plant. *Triturated with a little solution of caustic potash, a powerful odor, compounded of conia and amironia, was evolved.*

1. January 22, 1867. Took 250 grains of this extract, and having liquefied it with a little water and f ziv of solution of caustic potash (1 part to 3 of water), thoroughly washed the mixture with separate portions of æther. After distillation of the æther, there remained 1·8 grain of a dark sap-green oily matter, which partly solidified after some hours. It possessed all the physical characters of the impure conia, obtained from the dried leaf by the agency of potash and alcohol (see examination of the dried leaf). Treated with dilute sulphuric acid, a portion dissolved, leaving a remainder of oleo-resin, colored with chlorophyl. The acid solution contained nearly 1 grain of hydrated conia.

2. April 7, 1867. I took 10 grains of this extract.

April 10: 15 grains.

April 13. I licked up 20 grains. Not the slightest effect followed any of these doses, although the conditions for their development were as favorable as could be desired.

I gave this extract in the same doses to two female patients; the one suffering from an ovarian tumor, the other from anæmic headache and dimness of sight. No effects followed its use, not

even in the latter patient, who was already predisposed for its action.

Extract without the chlorophyl.—This was of the consistence of treacle, and had a similar bright and clear, but a richer amber-brown, color; odor faintly approaching that of the ordinary extract, taste pleasantly sweet and acidulous, without any trace of acridity. *Triturated with caustic potash, a strong odor of conia, mixed with that of ammonia, is evolved.*

1. January 26, 1867. Took 250 grains, and having liquefied it with f 3i solution of caustic potash (gr. 33 in f 3i), transferred the mixture to a retort, and distilled from a chloride of calcium bath, at a temperature varying from 260° to 270° F. 8½ fluid drachms of colorless fluid, with a faint greasy film, passed over. f 3v water, containing 50 grains of caustic potash, were now added to the contents of the retort, and distillation continued as long as alkaline fluid passed. 3viss of fluid in all, was obtained. The conia was obtained from this by neutralization with sulphuric acid, evaporation, separation of the sulphate of ammonia, decomposition of the sulphate of conia with H O, K O, and separation of the alkaloid by æther. It weighed only 0·2 of a grain.

2. By the process adopted in the separation of the conia from the ordinary extract (see above), I obtained from the same quantity (250 grs.) of this extract without chlorophyl exactly one grain of bright yellowish-brown oily fluid, which almost wholly dissolved in dilute sulphuric acid. It was, therefore, nearly pure conia.

3. February 13, 1867. I licked up 5 grains of this extract. March 10, 10 grains. April 2, 15 grains. April 3, 20 grains. No effects followed either dose; nor could I obtain the slightest physiological action in the persons of two delicate women by giving the extract in the above-mentioned doses. To produce the slightest evidence of the presence of hemlock, 50 grains at least would have been required, but the doses were not further increased; for to be of any practical value, the extract should contain such a proportion of conia that its effects may be manifested after a dose of 10 or, at most, 20 grains.

It would not be fair, perhaps, to conclude from the foregoing

experiments that all extract of conium is as deficient in medicinal power as the samples employed in these experiments have proved to be. Still, side by side with the facts referred to in this paper, they strongly persuade one to this view. The facts, indeed, of the particular cases before us are very strong. The juice employed in the preparation of the extracts has been proved, both physiologically and chemically, to be replete in active properties,—f 3j of the "Succus Conii" = f 3vj of the juice of the plant, and 30 grains of extract has been shown to contain 0.42 grains of conia; and every precaution was taken with the expressed juice to prevent decomposition by exposure to the air, to a high temperature, or to prolonged heat; and yet we find that 250 grains of it retain only a grain of the alkaloid. Again, two ounces of the dried leaf—equivalent to f 3vj of the juice of the plant, and to very nearly 4 grains of conia—retain less than half a grain of the active principle. I say, then, that in face of these facts, there is a very strong body of evidence against the medicinal value of the extract.

With a view of determining what becomes of the conia during the process of evaporation, I have conducted the following experiments :—

1. Evaporated f 3j of the Succus Conii, P. B., No. 1, over a water-bath to the ordinary consistence of the extract. About an hour was required for the operation. After liberating the conia, and completely removing it, I found that it weighed 0.30 of a grain, 0.12 less than I obtained by the same process from the same quantity of the succus, to which I had previously added f gss of dilute sulphuric acid, P. B., in order to fix the conia.

2. Placed f 3j of the same sample of "Succus Conii" in a retort, and distilled f 3iiss by the aid of a water-bath. The distillation occupied three hours. The first f 3iiss passed over during the first fifteen minutes, and was collected separately. Excepting that the first fluid was chiefly spirit, the distillates did not appear to differ; both possessed a stronger odor of the plant than the succus itself; both gave out an extremely faint odor of conia on the addition of caustic potash, both were rendered faintly opalescent by the addition of nitrate of silver and of chloride of mercury. The remainder was transferred from the

retort to an evaporating dish, and exposed to the heat of a water bath for another hour. The syrupy residue was then mixed with potash, and thoroughly washed with æther. 0.19 gr. of conia was obtained, being 0.11 gr. less than was obtained by the first experiment, and less than half of the quantity contained in the ounce of "succus."

3. Exposed f 3j of the "Succus" upon a plate in a glass-house with a south aspect, and where the natural temperature ranged from 70° to 90° F. After thirty-four hours the small syrupy residue was treated with potash and washed with æther; 0.25 of a grain of conia was obtained.

Two facts appear from these experiments—first, that the active principle of the plant is to a certain extent vaporizable even at a natural temperature of 70° to 90° F.; and secondly, that prolonged exposure to a high temperature is accompanied by a progressive diminution of the conia, the alkaloid being converted, as Dr. Christison has pointed out, into ammonia and some other secondary product.

Now the quantity of juice prescribed by the Pharmacopœia for conversion into extract, is about eight gallons, and the prolonged exposure to a temperature ranging from 140° to 212° F., required to effect this process, is doubtless sufficient to remove all but a trace of the active principle; and it is obvious from the foregoing that, given an efficient juice, the power of the extract will be inversely proportionate to the bulk of the juice operated upon; hence, to obtain an extract of full power, it will be necessary to expose the juice in a number of shallow dishes, and in a layer not exceeding half an inch in depth, to a rapid current of dry air having the temperature of 150° F., or thereabouts, so that the whole may be reduced to the consistence of an extract in the course of two or three hours. By this means an extract, containing 1 per cent. of conia at most, may be procured. And it is extremely doubtful whether a stronger extract can be prepared by this or any other process.

Such are the conclusions to which the foregoing experiments lead, and in respect of the use of the extract they are important. One fact is quite certain,—viz., that the power of the extract has been greatly over-estimated. The present Pharmacopœia (1867)

directs it to be given in doses of from 2 to 6 grains. Now, granting that this preparation retains the whole of the active principle, which, from my examination of the "Succus," I place at 1·4 grain in a 100 grains; 6 grains of the extract would represent only the 0·084 of a grain of conia,—a quantity insufficient to produce the effects of hemlock in a child two years old. The physiological action of hemlock is such, that doses which fall far short of producing it are of no use; and it is doubtful whether the possession of an extract containing 1 per cent. of conia—which I believe is the strongest that can be made—will be of any advantage, since 25 grains of it would be equivalent to only f ʒiv of the "*Succus*" of the Pharmacopœia.

It has been doubted by some whether the Athenian state poison was wholly derived from the hemlock; I see no reason myself—on account of the expression "*μικρὸν πᾶν καταπότιον*, a very little dose"—for doing so. The inspissation of the juice was effected, according to Dioscorides, by exposing it to the sun; and by this means a syrup may be prepared, of which, assuming the Greek plant to be equally powerful with that grown in these temperate regions, a table-spoonful or two would doubtless prove a fatal dose.

I will conclude these remarks by the following particulars, which will serve to render my account of the *Succus Conii*, No. 1, upon which I have chiefly based my experiments, more complete. f ʒj of the "*Succus*" yields six grains of white ash, which fuses with effervescence before the blow-pipe into a porcellaneous mass, dissolves with copious effervescence in the mineral acids, and the clear acid solution gives an abundant heavy yellow crystalline precipitate with bichloride of platinum. Hence it follows that the juice contains one or more vegetable acids and potash.

It is to be observed that Schrader† makes no mention of either soda or sugar in his analysis of the juice, and that he, De Machy and Errhardt‡ mention nitric acid as one of its constituents. I

* Theophrastos, Hist. Plant. iv. viii. p. 298, ed. Schneider.

† Berzelius, "Traité de Chimie," vol. vi. p. 254. Berlin Jahrbuch, 1805, s. 152.

‡ Bertrand, op. cit. p. 306.

have carefully examined the ash left by the combustion of the extract, and find myself in agreement with Bertrand and Baumé in being unable to discover a trace of nitrates.

Vapor Conia.—The use of the extract in the formation of the vapor is objectionable, for two reasons: first, the quantity of conia contained in the portion of mixture prescribed, is too small to relieve spasm; and, secondly, any influence which a minute portion of the alkaloid might possess, would probably be more than neutralized by the simultaneous evolution of ammonia from the alkalized extract.

In the following form these objections do not exist, and the dose of conia can be readily graduated:—

Conia, 1 grain.

Alcohol, $1\frac{1}{2}$ fluid drachm. Dissolve the conia in zss of the alcohol, and add the remainder mixed with the water.

Water, $2\frac{1}{2}$ fluid drachms.

20 minims contain $\frac{1}{12}$ of a grain of conia.

78, Upper Berkeley St., W., April 21, 1867.

—*London Pharm. Journ.*, June, 1867.

MANUFACTURE OF STARCH, UTILIZATION OF THE WASTE.

More than 100 tons of wheat are annually employed in the fabrication of starch in France. M. L. Maiche, of Paris, now proposes to utilize the waste as an aliment.

The best wheat only contains 55 per cent. of starch, while rice of the most ordinary description contains 85 per cent.; maize and buck-wheat also contain a considerable proportion. The difficulty consists in the separation of foreign matters, such as bran, cellulose, gluten, &c., contained in the pulp of the grains. Having isolated small quantities of cellular tissue and other substances, the author found that the specific gravity of these bodies was much less than that of starch.

If raw starch is placed in water, a small quantity of almost pure starch is deposited, but the bulk only falls mixed with the different substances above mentioned; these, although specifically lighter, are relatively more heavy, being much larger than the

starch grains. M. Maiche takes advantage of difference of specific gravity, in order to obtain a complete separation; he makes use of centrifugal force, by which the specifically heavier bodies are thrown farthest off. The mode of operation is the following:—A mixture of raw starch and two parts of water is introduced into a sort of drum of copper, turning on its axis at the rate of 1,000 to 1,200 revolutions per minute; as soon as the velocity attains 450 turns, the starch commences to be separated, and collects in a compact mass, adhering to the sides of the vessel; all the impurities remain in the water, in the centre, which is easily drawn off, while the perfectly white and pure starch can be removed in lumps. All amylaceous matters can be treated by this method, and the extraction of the starch, which formerly required several weeks, now takes place in a few minutes. The return is much greater, for 100 kilogs. of rice, costing less than 100 kilogs. of wheat, give more than 20 francs worth of starch. There is then no reason for employing, in the manufacture of starch, wheat which gives the best and most nutritious flour, and the chief principle of nutrition of which, the gluten, is almost entirely lost by the process actually employed.

F. MOIGNO.

London Chem. News, July 19, 1867.

PHENIC ACID, ITS MANUFACTURE AND PROPERTIES.

We give an extract from the excellent lecture given at the Society for the Encouragement of National Industry, on *Phenic Acid and its Compounds*, by Dr. Crace-Calvert. It is well known that when coal is heated to a low degree in retorts or distillatory apparatus it gives off substances that can be classed into four groups.

1. Gaseous products furnishing light, heat, and motive power.
2. Water containing ammoniacal salts, which can be purified by well-known chemical means, and utilized in agriculture and in the industrial and medical arts.
3. A thick, black, sticky mass of a repulsive odor, to which the name of *tar* has been given, and which passes over along with the above-named products.

4. A solid porous body, known by everybody as "coke," which remains in the retorts.

When tar is submitted to distillation, first water is obtained, then products which pass over with this liquid, but which, lighter than it, floats on the surface, and are therefore termed the *light coal oils*. Lastly, there is distilled a compound heavier than water, and consequently called *heavy oil*.

It was about the year 1837 that these heavy oils were first used for the preservation of sleepers according to Bethell's process. M. Farestier, engineer-in-chief of the department of the Vendée, conjointly with M. Marin, engineer, published a very remarkable and very complete work on the creosoting of wood and its preservation for twelve, fifteen, or twenty years from decay and the ravages of water and the teredo. There remains in the retort a substance fusible at the high temperature attained after the oils have passed over. This is asphalté or bitumen, which hardens on cooling. The distinguished lecturer then proceeded to "phenic acid," stating that M. Laurent, the great French chemist, was the first to indicate the method of extracting phenic acid from tar. It consisted in submitting the light coal oils to a partial distillation, and treating by a concentrated solution of potash, the products distilling at a temperature between 160° and 200° .

In 1847 Mr. Mansfield indicated another method of treating the heavy oils by caustic alkalies, and towards 1856 M. Bobœuf made known his modified process of M. Laurent. This consists chiefly in the use of caustic soda instead of potash, and treating the whole of the light oils, instead of a portion, by Laurent's method; but this only gave an impure acid, yet, in a commercial point of view, it was a progress. Of a similar nature were the products manufactured by Mr. John Bethell, since 1847, under the direction of Mr. Calvert. They were used for several purposes, either for the production of picric acid, or for transforming tannic acid into gallic acid, or for preserving organic substances from putrefaction. M. Bobœuf used it also very extensively for this purpose.

In 1859, M. Marmas, of the firm of Guinon, Marmas, and Bonnet, of Lyons, came to Manchester, and requested Mr. Cal-

vert to furnish a purer picric acid than that hitherto made, showing him, at the same time, a product white and crystalline, which they furnished as a type. Mr. Calvert made new researches and discovered that the most favorable mode of preparation was not to treat the coal oils with concentrated alkalies; but, on the contrary, to treat impure benzine of commerce, or naphtha, by weak alkaline solutions.

By this means, a blackish semi-fluid product was obtained, a little heavier than water, having a sp. gr. of 1.06, containing 50 per cent. of real phenic acid, and which acid he separated partly by the aid of distillation. After further researches, Mr. Calvert produced white phenic acid in detached crystals, melting between 26° and 27°C. Towards the end of last year he discovered a process by which he produces phenic acid free from all unpleasant taste; and what deserves remark is, that it is as pure, though it is made from coal tar, as if it had been artificially produced by the aid of reactions recently discovered by MM. Wurtz and Kékulé.

F. MOIGNO.

London Chem. News, July 19, 1867.

ARTIFICIAL MILK.

At the last meeting of the Academy of Medicine, M. Giboust, Professor at the School of Pharmacy, read a paper which we cannot help noticing. He called the attention of the medical world to the description given of the artificial milk invented by Baron Von Liebig, and regretted very much being obliged to enter into a controversy with him. After having reminded the assembly of the composition of this milk, and insisting upon the difficulties attending the preparation of such aliments in places where it might be most necessary, such as with wet-nurses or small families, M. Giboust added that we have at our disposal a natural product which more nearly resembles human milk than does a mixture of cow's milk, flour, malt, lactate and butyrate of potash. It is cow's milk itself. On an average, human milk contains a little more water, more sugar of milk, less butter and caseine than cow's milk. Thus, by taking the latter, and adding a little sugar and a fifth of its weight of water, we have an ali-

ment, at the disposal of everybody, forming a better substitute for human milk than any artificial compound.

M. Depaul, on his part, declared that he undertook experiments on new-born children, to examine the effects of this artificial milk, the taste of which was, by the bye, less agreeable than that of natural milk. Four children were tried. The two first were twins, and born prematurely. In spite of the care bestowed upon them, and the nourishment by the artificial milk, they died in two days. The third, born at full time, weighed 3 kilogs. 370 grammes; the mother was ill. The nourishment given was that of artificial milk. At the end of two days, the dejections became green, and on this day the child perished. The fourth infant, born under the same conditions, and nourished with the same aliment, died after four days. M. Wurtz promised to write to Baron Von Liebig, to obtain more precise details on the preparation of this milk.—*The London Chem. News*, July 15, 1867.

THE DIET OF PAUPERS.

In the diet of paupers, it is necessary that a due regard be had to economy at the same time that the food is adapted to the proper nourishing of the body. There should be as little waste material as possible. Dr. Edward Smith, of London, who has given the subject much attention, has of late been examining the relatively-nutritive value of the different cereals, as well as their commercial value. On a review of the subject, he says:—

“I arrive at the conclusion that wheaten-*seconds* flour should be universally adopted for the food of paupers, whether in or out of doors.” He found that the second flour is richer in nitrogen than the farina, which is the only part of the wheaten meal left after its several screenings, and it has, therefore, in one respect, an advantage in nutrition. Dr. Smith condemns the coarser kinds of bread, especially “brown,” not only on account of their being more indigestible, but also of their actually injurious operation, by giving rise to diarrhoea, from the mechanical action of the indigestible matter contained in the flour. On this point there will be, however, a considerable differ-

ence of opinion. Taking the two important elements of nourishing diet, carbon and nitrogen, Dr. Smith alludes to the fact that the daily requirements of an able-bodied adult, of the average weight of 150 pounds, are about $9\frac{1}{2}$ ounces of carbon and $3\frac{1}{2}$ drachms of nitrogen, when employed in-doors. Acting upon this estimate, he has proposed a diet for this class as follows:—9 pounds of bread per week, $16\frac{1}{2}$ pints of gruel, which contain a pound and a half of oatmeal, besides a due proportion of suet and molasses; once a week he is allowed a pound of meat pie, and twice a week 10 ounces of suet pudding, besides 9 pints of broth and soup, and half a pound of cheese; so that this class is daily allowed nearly two pounds of highly nutritious food, equal to a little more than 9 ounces of carbon and $3\frac{1}{2}$ drachms of nitrogen daily, which corresponds as nearly as possible with the amount demanded and supplied by the laborer, when he is free to make his own selection.—*Med. and Surg. Rep.*, July 20, 1867.

Varities.

Women as Apothecaries.—A decided advance in the matter of Woman's Rights has been made in Holland. The Minister of the Interior has issued a decree admitting women to examination for the position of assistant apothecaries—an operation hitherto restricted exclusively to men. This measure will enable country doctors to have their prescriptions made up by their wives or daughters, and will thus relieve them from the charges of a male assistant.—*New York Med. Jour.*, August, 1867.

Mr. Hoff and the N. Y. Academy of Medicine.—At the last meeting of the Academy of Medicine, the following resolutions were unanimously adopted:

Whereas, W. L. Hoff, proprietor or agent of the "Hoff Malt Extract," is issuing publications through the secular papers, and by means of pamphlets and circulars professing to quote favorable opinions expressed in a report of a committee of the Academy;

And, *Whereas*, the said Hoff is widely circulating a letter purporting to have been written by a Fellow of this Academy;

And, *Whereas*, the publications of said Hoff are so adroitly and designedly worded as to impress the mind of the reader with the belief that the

Academy has endorsed his nostrum, and has thus apparently compromised its dignity and professional standing—Therefore,

Resolved, That the N. Y. Academy of Medicine does hereby proclaim and declare that it has not expressed any opinion in regard to "Hoff's Malt Extract," and that any and every use of its name in recommending said Extract is unauthorized by the Academy.

Resolved, That a copy of the above preamble and resolutions be sent to the Medical journals of this city, and that the Medical journals throughout the country be requested to publish the same, in justice to the Academy and the profession.—*Ibid*.

Quack in Chicago.—A villain of a quack in Chicago is pretending to cure diseases not simply by laying on of hands, but by *supplying invalids with garments and paper imbued with healing virtues by contact with his body!* And the fellow has patients of course—and possibly certificates from clergymen to back him up in his imposition.—*Med. and Surg. Reporter*, Aug. 3, 1867.

Medical Matters.—A correspondent of the *Union Médicale*, writing about medical matters at the great "Exposition," says the best arranged vehicles for the transportation of the wounded in battle are those of the United States and of France. "The transportation of those who have been operated on, from ambulance to hospital, on the part of each nation, is formally installed [as we should say, 'has become an institution'] only in the United States. It must be confessed, these bellicose Americans have had opportunity and time to experiment with their *materiel*. Ah, incredible people! so intelligent and so warlike."

The writer then gives an elaborate description of our "hospital car," and adds, "all nations should take pattern from the United States in the arrangement of drugs, medicine flasks and boxes, for transportation. Everything fragile is protected. No shocks, overturnings, or other accidents can break the bottles or force out their stoppers."

The letter is closed with an admiring notice of our military hospitals.—*Boston Med. and Surg. Journal*, June 27, 1867.

Petroleum,* says the *Union Médicale*, is a powerful agent for the destruction of insects. The crude oil is the best for the purpose. A few *grammes* of petroleum diluted with water, and sprinkled by means of a watering pot over strawberry plants, destroys the *maus*, or "white worm of the beetle," which infests those plants. The crude oil mingled with a large proportion of water is a sure poison for crickets. The mixture is to be poured through a tunnel into the holes frequented by them.

The *acarus scabiei* is very promptly and radically destroyed by inunctions with the oil.

* Not oil of petroleum, as many journals have it.

Frictions with petroleum water (60 gr. per litre) immediately cleanse the domestic animals of the parasitic insects which annoy them. The animals should be washed with soap-suds a few minutes after the friction.

It is also stated that a house infested with rats and mice was freed from these guests a little while after the introduction of a large quantity of the oil into the cellar.—*Ibid.*

New form of Antiseptic for local use.—The liquor carbonis detergens is recommended. It is an alcoholic solution of coal-tar, containing, we presume, the carbolic, phenic, and other acids, with dark tarry matter, and differing from carbolic acid, as the liquor cinchonæ does from quinine. It readily mixes with water, forming a permanent emulsion, and in various strengths is available as a mouth-wash, a gargle, an injection for fetid uterine discharges, cancer, retained placenta, etc., gonorrhœa in the female, foul ulcers, sloughing sores, and all maladies dependent in, or complicated by, parasite beings, lice, fungi, etc. It is also used combined with soda.—*Buffalo Med. and Surg. Journal*, June, 1867, from *Med. Times and Gazette*.

Coating of Pills.—There is much ingenuity wasted in the coating of pills. Our apothecaries have “swung round the circle,” and revived an old and exploded practice of coating them with silver or tin. This is an abominable plan. Both chemistry and therapeutics are at war with it. Collodion protects the pill from solution in the stomach. Sugar and gum are the only legitimate materials. At best, however, there is but little use in coating pills. Any properly educated person can swallow an uncoated pill without tasting it. It comes natural to boys to swallow cherry stones, and everybody can take down grape seeds by the pound. Only by some trick or perversion of the apparatus of deglutition can difficulty arise, and this may be corrected by discipline. It is extremely unfortunate for a chronic patient to be unable to swallow pills. Some medicines can scarcely be administered in any other form, and many a dose, otherwise nauseous, may be smuggled into the stomach in this form, without awaking from slumber the gustatory sentinels. Parents should always see to it that their children do not grow up with the distressing trick of shutting down the gullet against a friendly pill.—*Pacific Medical and Surgical Journal*, June, 1867.

War and Insanity.—In the last Annual Report of the Taunton (Mass.) Lunatic Hospital, referred to in the *Boston Med. and Surg. Journal* for March, the Superintendent, Dr. Choate, says: “At the commencement of the great rebellion, contrary to common expectation, there was an immediate and general check to the numbers thronging to all public institutions, and to insane hospitals among the rest. This continued throughout the war, but with its cessation there has been an immediate though gradual

increase." "A few, but not many patients, have been admitted in whom the mental disease might fairly be attributed to their connection with the great contest." "On the whole, it seems probable that the general effect of the national trial has been healthful to the public mind, and that, although some new causes of mental disease have been introduced, yet the per centage of insanity has been slightly reduced." Are the causes of insanity becoming more numerous? or is insanity made more prominent and public by the modern system for the care of the insane?—are questions which the doctor deems probable should both be answered in the affirmative.—*Ibid.*

Saururus cernuus. By D. L. PHARES, A.M., M.D., of Newtonia, Mi.—The whole plant is medicinal, and has a rather offensive, heavy, slightly aromatic odor and taste. It is lenitive, anti-spasmodic, sedative, slightly astringent. It has been much used in some parts of the country in regular as well as domestic practice, as a soothing, discutient cataplasm. It has been highly and specially recommended as a remedy to allay pain, and prevent suppuration in mammary inflammation. In these affections I have never employed it; yet I doubt not its value as a cataplasm.

But for ten or twelve years I have employed it very extensively, and with most satisfactory results, in the treatment of irritations and inflammations of the kidneys, bladder, prostrate gland, urethra and epididymis. It is specially indicated in all cases attended with strangury, or ardorurinae; and when freely exhibited in warm infusion, very promptly removes the unpleasant symptoms. It is a valuable palliative in gonorrhoea and chordee; and a good vehicle for, and adjuvant to other remedies addressed to the genital urinary organs. It is not offensive to the stomach, and consequently is rarely rejected, even when that organ is in an irritable condition; it tends rather to allay the irritation.

I would venture the suggestion that this plant might be advantageously employed in treating some affections of the vagina, uterus and ovaries, both constitutionally, and in the former two locally. I think it might be used also beneficially in certain conditions of the nasal passages, fances, trachea, bronchia, &c.

In some parts of the country where I have introduced its use, it has become so popular that whole plantations of it have been exhausted. A strong, hot infusion of the plant, crushed, whether dry or recent, is made. Of this, the patient may take from one to four ounces every quarter or half hour, or only three or four times a day, according to the urgency of the symptoms or particular object had in view in its exhibition. It may often be substituted for buchu or uva ursi leaves, and in many cases is much superior to either.—*Atlanta Med. and Surg. Jour.*, July, 1867.

Prof. Pancoast's Recipe for Beef Tea.—Take a pound of beef, carefully freed from fat, from the loin or neck, and cut it into small pieces, as large

as the end of the thumb. Then add five grains of unbroken black pepper and a little salt, care being taken not to spoil it by making it too salty, as is often done. Pour on a pint of cold water, and simmer on the fire for forty minutes. Take out the meat, squeeze all the juice from it through a linen bag into the tea, which then boil for ten minutes.—*Med. and Surg. Reporter*, July 20, 1867.

Sugar in Muscle.—Dr. Ranke, of Munich, has by recent experiments confirmed the discovery made by Meissner, that a true, fermentable sugar exists in the muscle, which is increased by muscular action (tetanisation caused by strychnine or electricity), and further that the liver has no effect in causing this increase, for the sugar is proved to arise in the muscle itself, and not from muscular substance.—*Ibid*.

Pepsin.—The physician before using, pepsin in his practice, should assure himself of its purity by testing, as there are many spurious articles found in commerce. It should be completely soluble in water.

The indications for its use are: first, deficient secretion of the gastric juice: second, imperfect peristaltic movement of the stomach and intestines: third, too short a stay of the food in the stomach. One or two grains of pepsin are sufficient for a dose. Dr. Hollman has found it very efficient in anæmia, chlorosis, atrophy and debility from loss of blood or from severe sickness; it may be given alone, or combined with opium or tonics or other remedies; if given alone it is mixed with a little sugar or milk.—*Druggists' Circular*.

NOTICE.

American Pharmaceutical Association.

Notice is hereby given, that the Fifteenth Annual Meeting of the American Pharmaceutical Association will be held in New York city, commencing at 3 o'clock, P. M., on the second Tuesday in September (10th), 1867.

A suitable room has been secured by the local secretary, in the University Buildings, on University Place, corner of Waverly Place.

Aside from the importance of the reports to be submitted, it may be of interest to the Association to know that several of our members, now abroad, will act as delegates of the Association to the International Congress of Pharmaceutists at Paris, August 21, and will return in time to be present at the session in New York.

A cordial invitation is extended to all engaged in trade or manufactures connected with pharmacy, to send specimens of their stock or products for exhibition during the session.

These may be sent to P. W. Bedford, Secretary of the American Pharmaceutical Association, University Buildings, New York city, notifications to that effect being addressed to him in advance, by mail, to 769 Sixth Avenue.

FREDERICK STEARNS,

President of the American Pharmaceutical Association.

Detroit, May 15, 1867.

AMERICAN PHARMACEUTICAL ASSOCIATION.

NEW YORK, July 12, 1867.

Sir :—The Annual Meeting of this Association will be held in this city, September 10th, 1867.

It is proposed to have an *Exhibition of Objects relating to Pharmacy*, or having a special interest for members of the Association. It is very probable that the meeting will be more largely attended than any preceding.

The following classes of articles are particularly desired :

1. Chemical apparatus, including those for pharmaceutical processes. This includes apparatus and utensils for evaporation, distillation, percolation, &c., and analytical apparatus of all kinds.

2. Microscopes, microscopical apparatus and objects.

3. Apparatus used for remedial purposes, as galvanic and electro-magnetic machines, enemas, surgical appliances, &c.

4. Glassware, adapted for the wants of the apothecary.

5. Scales and weights, for chemical and store purposes.

6. India Rubber goods, for pharmaceutical, chemical, or remedial purposes.

7. Improved dispensing appliances, as bottles, boxes for pills and powders, labels ; protection against mistakes by pharmacist or patient, etc.

8. Medicines newly introduced or proposed for use.

9. Mineral Waters and apparatus, including natural and artificial medicinal waters, and apparatus for making and dispensing them.

10. Specimens of chemicals, drugs, pharmaceutical preparations, as also botanical specimens.

11. Illustrations of adulterations, and the means of detecting them.

12. Improved dietetic preparations.

13. Books relating to pharmacy or collateral sciences.

14. Historical relics having an interest in connection with pharmacy, or its cultivators, as portraits, photographs, autographs, &c.

15. Any improvements in branches connected with pharmacy, not included in above.

The Exhibition will be open from Tuesday, September 10th, to Saturday, September 14th, inclusive.

The following regulations are to be observed :

1. Articles for exhibition are to be delivered, free of expense, at the University Building (University Place, corner Waverly Place), on or before September 6th ; an invoice of the goods being previously sent to the Local Secretary.

2. Descriptive accounts should accompany all apparatus, &c., that are new or not fully understood.

3. The Local Secretary will take charge of unpacking and repacking articles sent for exhibition.

4. Articles intended for sale must have full particulars, addressed to the Local Secretary.

Should you be willing to exhibit any articles, please address the undersigned, *without delay*, stating what kind of articles you propose to send, the space required, and whether on floor, table, or wall, or if a glass case is necessary.

Yours Respectfully,

P. W. BEDFORD, Local Secretary,
769 Sixth Avenue, New York.

ABSTRACT FROM THE MINUTES OF THE MASSACHUSETTS COLLEGE OF PHARMACY.—The regular meeting of the Trustees was held Aug. 7th, Mr. S. M. Colcord presiding.

Mr. G. F. H. Markoe, in behalf of Messrs. L. Martin & Co., operative chemists, of Philadelphia, presented to the College a cabinet of fine chemicals, and gave some results obtained by testing the most important articles, all of which were found of excellent quality. The following resolutions were offered, and unanimously adopted :

Resolved, That the Massachusetts College of Pharmacy gratefully appreciate the interest manifested in the College by Messrs. L. Martin & Co., as exhibited by their generous donation.

Resolved, That we cheerfully recommend to New England pharmacutists the chemicals made by Messrs. L. Martin & Co., as being of excellent quality, and well worthy to replace the commercial articles, which are too often impure, and unfit for pharmaceutical uses.

Resolved, That the Corresponding Secretary be instructed to forward a copy of these resolutions, with the hearty thanks of the College for the collection of chemicals added to its cabinet.

The following gentlemen were chosen delegates to attend the meeting of the American Pharmaceutical Association, to be held in New York in September :—

Chas. A. Tufts, Geo. F. H. Markoe, Geo. P. Ricker, S. M. Colcord, A. P. Melzar.

GEO. F. H. MARKOE,
Cor. Sec. Mass. Coll. Ph.

Editorial Department.

FIFTEENTH ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.—Before this number will reach some of our subscribers, this meeting will take place in the city of New York, where the Local Secretary, in conjunction with a committee from the New York College of Pharmacy, has made preparations for the reception of the Association. When the meeting was last held in New York, in 1860, it was probably the largest gathering of pharmacists in the United States up to that time, and now, after a lapse of seven years, we may confidently expect that the coming meeting will be of still greater importance, and, as far as numbers are concerned, assume still greater proportions. We have received letters from nearly every section of the United States, the writers expressing the hope of greeting old friends again on the 10th of September next, and of deliberating with them about the welfare of the Association, and of the profession of pharmacy in this country. The delegates to the International Pharmaceutical Congress, which was held at Paris during the latter part of August, may probably return in time and report to the meeting. The following members had been duly accredited to that duty:—Professor Wm. Procter, Jr., of Philadelphia; John Faber, of New York; Thos. E. Jenkins, M.D., of Louisville, Ky.

We have been informed that the Union Place Hotel, corner of Broadway and Fourteenth Street, has been selected as the headquarters of the members during the meeting, which will convene at the University Buildings on Tuesday, Sept. 10th, at 3 o'clock, P. M.

PRESCRIPTIONS—WHOSE PROPERTY ARE THEY?—If our memory serves us correctly, this or a similar query was discussed, some years ago, in the English journals, but we do not remember the conclusion arrived at. In central, northern, and eastern Europe, the prescriptions which have been compounded are handed back to the patient for whom they were prescribed; the pharmacist retains them only in case they are not paid for, and the very fact of the prescription being in his possession, is evidence of his claim for the amount which he is legally authorized to charge for the same. In this country the custom prevails of the prescriptions being retained by the apothecary. Neither in Europe nor in the great majority of cases in this country has the right of the patient been questioned to have a prescription renewed as often as he pleased. For a number of years past, however, we have known several physicians in this city who had a sort of a contract printed upon the papers used by them for writing their prescriptions upon, in which it was stipulated that "this prescription is to be retained by the pharmacist, who will neither furnish a copy nor renew it without the written order of the prescriber." To the best of our

knowledge these stipulations have been faithfully adhered to by the dispensers, who regarded this as a contract entered into by the patient and attending physician, and whereby they were constituted as the custodian of certain properties of the latter. If the physician wishes to guard against improper uses being made of his prescriptions, this course appears to be a very simple one, which guards his supposed right in the prescription for this particular case, and at once relieves the pharmacist from all demands arising from the supposed right of the patient for this same prescription, which was written for him.

The East River Medical Association have taken this matter into consideration, and at their stated meeting, held July 2d, adopted the following:—

Whereas, The attention of this Society has been called to consider the propriety of taking action relative to the practice of druggists renewing the prescriptions of physicians without their written order, thereby injuring very materially the pecuniary interests of the profession, without gaining any particular benefit to themselves; and

Whereas, In view of the graver and more important consideration that the interests and lives of patients are, in consequence, endangered, we consider it a duty to guard to the utmost of our ability against the liability to mistakes which should be prevented rather than deplored; be it therefore

Resolved, That we cordially invite the earnest co-operation of every druggist in this city, especially in our immediate districts, to further this laudable purpose; and be it further

Resolved, That we respectfully request that no druggist will renew the prescriptions of any physician connected with this Society, without due authority for each and every such renewal. Further, we will regard as unworthy of our patronage any druggist who fails to comply with the requirements of these resolutions.

Resolved, That a copy of these resolutions, with a blank card, be sent to each and every druggist in our districts, with a request that the card be returned within two weeks to the Secretary, signifying their intentions, with reference to compliance, or non-compliance, with these resolutions.

We do not object to the obligations put upon the pharmacist (not druggist) by these resolutions; we are firmly convinced that all true followers of pharmacy will, as far as in their power lies, assist in carrying out such an agreement entered into between patient and physician. Thus far, however, we can see no "impropriety" in repeating prescriptions without a written order,—a practice which has been established by long usage, which has been countenanced by the continued *verbal* orders of most physicians, and which can be abrogated only by a course similar to the one pointed out above.

M.

HOW TO BECOME AN M. D.—Some weeks ago, we had the pleasure of receiving a little sheet headed, *Mariott's Philadelphia Collegiate Agency*. It is issued by G. W. Mariott, D.D., M.A., M.D., and is made up of notices of the medical and dental colleges and some journals, established in this city. The number before us knows nothing of the Philadelphia

College of Pharmacy, nor of the *American Journal of Pharmacy*, both of which have existed for a longer period than the average duration of the human life. While inquiring of us about the College, the gentleman who handed us the above mentioned sheet learned that we were not so fortunate—as the *Medical Record* of New York has it—of being legally entitled to the appellation of Doctor of Medicine; to remedy this defect, he proposed to procure for us the legal right of attaching M.D. to our name, by granting—to be sure, after an examination—a diploma from a regularly chartered Medical College. We were rather too hasty in declining the proffered honor, to receive which we frankly acknowledged our unworthiness; we might perhaps have learned which regularly constituted College is disposed to grant diplomas in such an extremely regular way. On this point we were left completely in the dark, and had to content ourselves with the assurance that the gentleman was duly authorized—besides granting for the consideration of \$75, and after due examination, the title of M.D.—likewise the degrees of Doctor of Divinity, Doctor of Laws, and Master of Arts. Unfortunately, we belong to that variety of the genus homo who have no particular use for any one of these titles, being content to be simply an apothecary, or, to use a nicer expression, a pharmacist. Considering it, however, as a prime duty to be charitable to our fellowmen, we would herewith inform our medical friends that they might have procured the “handles” to their names with less trouble, and all seekers after such distinction, how they may be accommodated on the most reasonable terms. And thus we leave this plenipotentiary for conferring all sorts of scientific honors to the tender consideration of all whom it may concern.

J. M. MAISCHE.

CONSANGUINEOUS MARRIAGES.—We have received the following circular, which we publish for the information of our readers. The importance of the subject renders the co-operation of all desirable who possess information relating to this subject:

118 West Houston Street, New York, July, 1867.

SIR:—At the late meeting of the “Medical Society of the State of New York,” it was resolved: “That a Committee be appointed to investigate and report upon the result of consanguineous marriages, &c.”

If such marriages come under your observation, you will confer a favor by answering the following questions, and transmitting such report, before November next, to the undersigned, one of the Committee appointed:

1. Name (initials) and age of husband.
 2. Nativity.
 3. Age when married.
 4. Constitution.
 5. Health, deformities, peculiar diathesis.
 6. Health of his family, hereditary diseases, deformities, &c.
-
7. Name (initials) and age of wife.
 8. Nativity.

9. Age when married.
10. Constitution.
11. Health, deformities, peculiar diathesis.
12. Health of her family, hereditary diseases, deformities, &c.

13. How are the parties related to each other?
14. How long married?
15. How many children, or sterility?
16. Abortions; cause; how many, and at what period?
17. Children died, at what ages and from what diseases?
18. The constitution, age and present health of living children, deformities, mental conditions, idiocy, cretinism, deaf, mute, blind, epilepsy, albinism, insane, &c.
19. Remarks and other information.

Hoping to receive your valuable co-operation, for the advancement of medical science, I remain yours, most respectfully,

ROBERT NEWMAN, M.D.

IODIDES OF CALOMEL.—Our attention has been called to the following note which appeared in a late issue of the *Chemical News*:

"JAMES Y.—The term iodide of calomel is retained in American pharmacy for a mixture of iodide and chloride of mercury, prepared by mixing iodine with calomel. According to the same barbarous nomenclature, there is a biniodide of calomel."

The mixtures in question were proposed by Boutigny, and a process for their preparation, by Gobley, was published in this journal in 1858; from there they found their way into Parrish's Pharmacy, 3d edition, page 484. To the best of our knowledge, they have never been used in this country, and the barbarous names were given them merely because they were christened thus by their French parents. We can assure our correspondent that we have always looked upon them—the preparations as well as the names—as a curiosity and as an indication of what men may come to in their continual endeavor of producing some "new preparation."

M.

LECTURES ON THE TREATMENT OF THE SURGICAL DISEASES OF WOMEN.—By reference to the advertising sheet, our readers will learn that Dr. Storer will deliver a private course of lectures on the above subject in December next. His lectures have been highly commended by his former attendants, and no doubt the Doctor will again have a good class of medical gentlemen to hear him on a topic to which, we understand, he has paid special attention for a considerable period.

M.

THE APPROACHING LECTURE SEASON.—We have received circulars from the different Colleges of Pharmacy announcing the regular courses of lectures commencing in October next. We are pleased to learn that the prospects of all are favorable for larger classes than usual. We also notice with pleasure the contemplated introduction of botanical courses during the summer season.

If we understand the tenor of the circular correctly, *apothecaries only* can graduate at the Maryland College of Pharmacy, which grants to wholesale druggists a *certificate of proficiency* (not a diploma) under similar restrictions under which apothecaries may receive the degree of *graduate in Pharmacy*. This is, we believe, the first of our Colleges drawing the distinction between *Apothecaries* and *Druggists*.

We sincerely wish that all the Colleges may meet with the success which they hope for, as by sound education only the cause of pharmacy is furthered and the profession raised to that position which it deserves.

We refer to our advertising sheet, where full information may be obtained.

THE Atlantic telegraph has informed us of the death of Professor FARADAY, which occurred on the 27th of August. We hope to be able in a future number to give a sketch of the life of this eminent man.

Micro-Chemistry of Poisons, including their physiological and legal relations: adapted to the use of the Medical Jurist, Physician, and General Chemist. By Th. G. Wormley, M.D., Professor of Chemistry and Toxicology in Starling Medical College, and of Natural Sciences in Capital University, Columbus, Ohio. With 78 illustrations upon steel. New York: Balliere Brothers. 1867.

This excellent work is a very valuable addition to the literature on the subject of poisons. Each page bears evidence of untiring research and of a vast amount of labor. The increase of our knowledge, at least as far as the limits of observable chemical reactions of poisons is concerned, as well as the observations regarding confirmatory tests and methods of separation, is very considerable and deserves the hearty commendation of all interested.

The external appearance of the work is very creditable; it is printed with clear types upon 668 large octavo pages. The illustrations are contained upon thirteen plates; they are very clear and illustrate the appearance, under the microscope, of the precipitates and crystallizations extremely well. It deserves to be noticed that this part of the work is due to the skill of Mrs. Wormley, who has drawn them from nature and transferred them to steel.

In regard to the scope of the work, the author observes: "It was originally intended to confine the work exclusively to the *chemistry* of poisons, but, in order to adapt it to a larger class of readers, it was finally determined to also consider their physiological and pathological effects, and point out the treatment proper for each." Without intending to find fault with him, we confess that we should have preferred to see the two branches treated in different volumes; both subjects would then appear to still greater advantage, be more connected and comprehensive. We confess, however, that, at home, the *Chemistry of Poisons* would then prob-

ably not have attracted that attention which it merits, but which, we hope, it will receive now both at home and abroad.

The introductory remarks are concluded on page 61; the remainder of the work is divided into two parts,—the inorganic and organic poisons. The first part treats of the alkalies, including ammonia, of the mineral acids, of oxalic and hydrocyanic acids, phosphorus, in connection with which phosphoric acid is noticed, antimony, arsenic, mercury, lead, copper, and zinc. Under the head of vegetable poisons are treated nicotia, conia, opium with its alkaloids, meconic acid and opianyl, nux vomica and its alkaloids, aconitia, atropia, daturia, veratria and solania.

It will be seen that the compass of the work is circumscribed, notwithstanding the author has labored at it since 1857. We miss among the inorganic poisons those corrosive elements iodine and bromine, then baryta, strontia, tin, and other heavy metals. Among the vegetable poisons the following alkaloids are not noticed: delphinia, sanguinarina, emetia, hyoscyamia, colchicia and lobelina, likewise digitalin, picrotoxin and some other compounds. It is to be hoped that the author may find time to continue his researches with them, and embody the results either in a future edition of his work, or in a separate volume.

The material of each article is arranged in about the following order: history, physiological effects, symptoms, treatment, post mortem appearance, chemical nature, special chemical properties (reactions and tests), separation from organic mixtures, quantitative analysis. That portion relating to the action and treatment is of less *direct* interest to the pharmacist; still desirable, if not important for him to know, are the facts in regard to the smallest fatal doses, the rapidity of action, and the proper treatment, which are related with minuteness.

Reading over the chemical portion of the work, we were pleased with the clearness and precision of the descriptions in general, though occasionally a want in this respect may be noticed.

The use of the antiquated term subcarbonate of potash, on page 67, was doubtless accidental and subsequently overlooked, since we have met with it but once, while in all other cases the proper chemical term carbonate, or protocarbonate, is employed. On page 72 it is stated that fused potassa, "when pure, is a white solid, but as *usually* met with in the shops in the form of little sticks, it has a greyish or brownish color." We hope the author may be mistaken, and that even in the far West the purer white compound is kept on hand by pharmacists. On page 95, the *distillation* of liquid organic mixtures at a *moderate heat* is recommended to separate *any* of the ammonia or its *carbonate* present. It is difficult to convey in a few words an idea of the different behaviour in this respect of ammonia and its carbonates. While a greater portion of the alkali is readily obtainable at a *moderate heat*, unless it be very largely diluted, a higher degree of heat is required in case of the carbonates, and it must be increased with the amount of carbonic acid in combination with the alkali.

The statement on page 71 that sulphate of magnesia does ~~not~~ precipitate the carbonate of ammonia, requires qualification, to the effect that in the absence of ammonia salts, salts of magnesia will be precipitated to some extent after some time by the neutral carbonate.

Phosphomolybdate of soda does not precipitate *alkaline* solutions of ammonia (p. 94). On the same page and page 85, it is stated that ammoniate of potassa produces no precipitate with ammonia or its salts; is this positively the case under all circumstances? When testing by this reagent for soda in the presence of ammonia salts, it has been customary to previously destroy the latter (see Fresenius' Qualitative Analysis).

For the separation of poisonous alkaloids, Dr. Wormley considers the methods of Stas, of Rogers and Girdwood, of Uslar and Erdmann, of Graham and Hofmann, and by dialysis. This last process has given very unsatisfactory results in regard to quantity, which is corroborated by several other experimenters. A. T. Machattie stated in 1864 (Chem. News, x. 183) that the results are much more satisfactory if the membrane of the stomach or the intestines is used for the dialytic septum instead of parchment paper. Uslar and Erdmann's process has lately been considerably improved by Dragendorff, in the substitution of pure benzine for amyl alcohol.

For the separation of morphia by Stas' method, acetic ether was proposed instead of ether by A. Valser, in 1862, the alkaloid being more freely soluble in the former liquid.

The tests used for the alkaloids are mostly those of long established value; the solution of bromine in bromhydric acid we believe is a new one, —it is for many alkaloids pretty delicate, but, as the author states, the reaction is common to most of the alkaloids, and many other organic compounds.

A number of reagents which have been proposed during the last ten years, partly for recognizing the alkaloids as a class, partly for distinguishing them, and partly for separating them from organic mixtures, have not been experimented with. We refer particularly to Sonnenschein's phosphomolybdic acid, Scheibler's phosphotungstic acid, Schultze's pentachloride of antimony and phosphoric acid, Horsley's nitro-prusside of sodium, Delf's platino-cyanide of potassium, and to Helwig's method of sublimation; also to Von Planta's hydrargyro-iodide of potassium, which was modified by Th. B. Groves, and has been used in this modified state by Prof. F. F. Mayer, for the quantitative estimation of the alkaloids as well as for their separation in a pure state, and finally to R. Wagner's method of volumetric estimation of many alkaloids by iodide of potassium. One or two other tests have been recommended so recently that the author could not have examined them for his present work with the same minuteness which characterizes all his researches in the field of micro-chemistry.

Among the many new facts and new suggestions which we met with in our hasty examination of Dr. Wormley's work, the following appears to us

as particularly valuable, not merely in forensic analysis, but more especially for technical purposes: we refer to the detection of minute quantities of *free sulphuric acid* by means of veratria. The liquid is mixed with a little of the alkaloid, heat is applied, and the colorless solution is evaporated to dryness on a water bath, when the residue will have a crimson color more or less intense. The author has detected $\frac{1}{1000}$ grain of sulphuric acid in this way, and even $\frac{1}{5000}$ grain gives to the residue a perceptible red tint. Since no other known acid has the same reaction, neither sulphuric acid in combination, the test will be a valuable one for the detection of sulphuric acid in acid liquids, in which it is frequently used as an adulterating agent (vinegar for instance), or is present as an impurity.

We have devoted so much space to the review of this work, because we hail it as a very important addition to our scientific literature, and as such heartily recommend it to our readers. The author we sincerely wish may find the leisure of extending his researches also in the directions pointed out above, for which, from his past experience, he appears to be eminently qualified.

J. M. M.

OBITUARY.

THEOPHILE JULES PELOUZE, died on Friday last, the 31st of May, at his country house at Bellevue, close to Sévres. Born the 13th of February, 1807, at Valognes (Département de la Manche), he inherited his love for science and arts from his father, Edmund Pelouze, a man of great practical talents, formerly employed in the manufactory of Gobelins, and afterwards director of the gasworks of the Manby and Wilson Company at Paris. Pelouze the elder is known as the author of a great number of treatises on various branches of applied chemistry—on glass-making, on brick making, on colors and varnish-making, on washing and bleaching for housewives, etc. His treatise on the last-named subjects was published under the name of his wife. His chief work, "On the Manufacture of Gas," was revised by his son, and came out in a second edition as late as 1859.

Young Pelouze entered life as a pharmaceutical chemist; but he was only twenty years old when Gay-Lussac made him his assistant, and published some of his researches conjointly with him. Three years later, in 1839, he became professor of chemistry at Lille. Here he examined the juice of beetroot, and, in conjunction with Kuhlmann, published a paper on its fermentation. From 1831 until 1847 he took the place of Gay-Lussac as Professor of Chemistry at the École Polytechnique, and at about the same time (1831) he was elected to supply the place of Thénard as professor at the Collège de France. Shortly after these elections Pelouze managed to go to Giessen, and to publish joint researches with Liebig on the ether contained in wine, to which they gave the name of *œnanthic ether*, but which was afterwards proved by Delffs to be identical with *pelargonie ether*. In 1833 Pelouze became Assayer, and in 1846 Controller (*Vérificateur*) of the Mint. He was elected a member of the Académie

des Sciences in 1837. Of republican views, and much interested in politics, he became prominent through the revolution of 1848. The provisional government elected him to a place which until then belonged to the nobility or to the chief dignitaries of the state, that of President to the Board of the Mint (Président de la Commission des Monnaies). This position he held until his death. He became successively knight, officer, and commander of the Legion of Honor. His private laboratory for pupils in the Rue Dauphine closed when he opened a laboratory in the mint.

The number of papers published by Pelouze is very great. We can only mention here the most prominent of his researches. Among these none will be better remembered than the investigation recorded in his paper on the transformation of hydrocyanic acid into ammonia and formic acid. This paper was published in 1834, but the importance of his discovery became evident at a much later period, when hydrocyanic acid was first produced from carbon and nitrogen. Then it was that the transformation which Pelouze had effected by treating hydrocyanic with a strong solution of hydrochloric acid attained its remarkable position as the first instance of the synthesis of an organic body from its elements. At the time of the discovery its real importance could not be appreciated, but even then the relation of formic to hydrocyanic acid was of much interest. Next in importance to this memorable paper are several papers on the products of the dry distillation of lactic, malic, and tartaric acids. Pelouze discovered lactic anhydrid and lactid. Maleic and pyrotartaric as well as pyrogallic acid, if not actually discovered were, at least, chiefly studied by him. The salts of lactic acid were likewise examined by Pelouze, and described in several papers, one of which he published conjointly with Gay-Lussac.

A memoir on mustard oil was published by Dumas and Pelouze; another on asparamid (asparagine) and asparamic acid by Pelouze and Bourton, and a joint research on curarine was published by Pelouze and Claude Bernard. In mineral chemistry nitrosulphuric acid constitutes his chief discovery. In applied science numerous contributions, particularly on fulminates and the manufacture of percussion-caps, and above all on glass, were published by him at various intervals. Pelouze had an interest in large glass works at St. Gobin, and his last communication made to the Academy, some months ago, treated on the subject of this manufacture. A treatise on chemistry in five volumes by Pelouze and Fremy has seen three editions, the last of which was published in 1866. All these publications, if they do not place him among the very first French savants, will preserve his name permanently in the history of science. His great kindness of heart, and sincere and active interest for his pupils, will not easily be forgotten. There are and have been witnesses to these genial qualities in England. Professor Grace Calvert and the late Mr. Stoikowitch were assistants to Mr. Pelouze. During the last year important researches on aniline colors were carried on in his laboratory by MM. Girard, de Laire, and Chapoteaut.—*The Laboratory*, i, 182, June 8, 1867.

JOURNALS, &c., RECEIVED SINCE THE LAST ISSUE.

- The Pharmaceutical Journal and Transactions, London.
 The Chemist and Druggist, London.
 Chemical News, London.
 Vierteljahresschrift für praktische Pharmacie, Munich. By Dr. G. C. Wittstein.
 Journal de Pharmacie et de Chimie, Paris.
 Journal de Chimie Médicale, de Pharmacie et de Toxicologie, Paris.
 Répertoire de Pharmacie, Paris.
 Revista Farmaceutica, Buenos Ayres.
 The Druggist's Circular and Chemical Gazette, New York.
 American Journal of the Medical Sciences, Philadelphia.
 Journal of the Franklin Institute, Philadelphia.
 Proceedings of the American Philosophical Society. Philadelphia.
 Proceedings of the Academy of Natural Sciences of Philadelphia.
 Boston Medical and Surgical Journal.
 The American Journal of Science and Arts, New Haven, Conn.
 The Medical and Surgical Reporter, Philadelphia.
 The American Journal of Insanity, Utica, N. Y.
 Medical News and Library, Philadelphia.
 The Cincinnati Lancet and Observer, edited by Dr. E. B. Stevens.
 The Ohio Medical and Surgical Journal.
 The Chicago Medical Journal, edited by Samuel Brainard, M. D., and J. Adams Allen, M. D.
 The Pacific Medical and Surgical Journal, edited by Henry Gibbons, M. D. San Francisco, Cal.
 Buffalo Medical and Surgical Journal, Buffalo. Edited by Dr. I. F. Miner.
 The Chicago Medical Examiner, Chicago.
 Eclectic Medical Journal. Edited by Dr. J. M. Scudder.
 The San Francisco Medical Press. Dr. E. S. Cooper, Editor.
 St. Louis Medical and Surgical Journal. Edited by Drs. Linton and White.
 Dental Cosmos, Edited by J. H. McQuillan, D. D. S., and George J. Ziegler, M. D.
 The Richmond Medical Journal. Edited and published by Drs. Gaillard and McChesney. Richmond, Va.
 The Journal of Materia Medica. Edited by Dr. Joseph Bates and H. A. Tilden, New Lebanon, N. Y.
 New York Medical Journal.
 United States Medical and Surgical Journal, Chicago.
 The Savannah Journal of Medicine. By MM. Harriss, Read and Thomas.
 The Medical Reporter: a semi-monthly Record of Medicine and Surgery. St. Louis.
 The Medical Record. New York. Semi-monthly.
 The Journal of Applied Chemistry, New Lebanon, New York. Prof. Dussauce, Editor.
 Atlanta Medical and Surgical Journal. Atlanta, Ga.
 The Detroit Review of Medicine and Pharmacy.
 The Nashville Journal of Medicine and Surgery.
 The Dental Times: a Quarterly Journal of Dental Science.
 Southern Medical and Surgical Journal, Augusta, Ga.
 New Orleans Medical and Surgical Journal, New Orleans, La.
 The Leavenworth Medical Herald. Leavenworth, Kansas.
 Prize Essay on Medical and Vital Statistics. By Franklin B. Hough, M.D. Albany. 1867.
 Quarterly Summary of the Transactions of the College of Physicians of Philadelphia.
 24th Annual Report of the State Lunatic Asylum at Utica, N. Y.
 Braithwaite's Retrospect of Practical Medicine and Surgery. Part LV. July, 1867.

AMERICAN JOURNAL OF PHARMACY.

THIRD SERIES.

This Journal is devoted to the advancement of Pharmaceutical knowledge, including practical Pharmacy, Materia Medica, and Chemistry, in its general and applied relations, and to the collateral sciences, Botany, Mineralogy, Zoology, &c. Intended for the benefit of the Apothecary, the Druggist, and the Physician, it merits their patronage and support.

It is published Bi-monthly in an octavo form, each number consisting of 96 pages. The paper is good, the type large and clear, and attention paid to neatness in the general execution. Price \$3.00 per annum, in advance.

All communications to the Editor should be directed to WILLIAM PROCTER, JR., No. 500 south Ninth Street, Philadelphia.

SUBSCRIPTIONS should be paid to CHARLES ELLIS, N. E. corner 7th and Market streets, Philadelphia, Treasurer of the Publishing Committee, and all letters relating to the distribution and financial affairs of the Journal must be sent to the Treasurer, as above.

ADVERTISING SHEET.—An advertising sheet will be appended to each number of the Journal, in which advertisements of new preparations and apparatus, business notices, book notices, etc., will be inserted at the rate of \$5.00 per page for one insertion, or \$20.00 per annum for six insertions.

As a prominent object of the establishment of this Journal, was the discouragement of empiricism, advertisements of quack medicines, properly so called, will be excluded. Advertisements to be directed to the Editor as above.

AGENTS.

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Foreign Exchanges sent to Mr. C. J. Skeet, Bookseller, 10 King William St., Charing Cross, London, W. C., directed "for the American Journal of Pharmacy, care of John Pennington & Son, Philadelphia, U. S." will reach us.

1868 Jan 18

VOL. XXXIX.]

AMERICAN

[NO. VI.

JOURNAL OF PHARMACY,

PUBLISHED BY AUTHORITY OF

THE PHILADELPHIA COLLEGE OF PHARMACY.

EDITED BY

WILLIAM PROCTER, JR.

THIRD SERIES.]

NOVEMBER, 1867.

[VOL. XV. NO. VI.

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NOTICE BY THE PUBLISHING COMMITTEE.

The American Journal of Pharmacy has now completed its 39th volume. On an examination of the stock of the Journal, the Committee find that eight of the volumes are wholly or partially out of print—viz., vols. 1, 2, 3 and 5 of the first series, and vol. 1 of the 2d series, and the 4th, 5th and 13th vols. of the 3d series. All the remaining volumes, 29 in number, they can supply on demand. Believing that the work embodies a large amount of information, extremely valuable to Apothecaries, Druggists and Physicians—comprehending, in fact, a faithful record of the development of Pharmaceutical science and inventions during the period of its issue, now about thirty-eight years, both in Europe and America, the Committee consider that no Pharmaceutical library should be without it.

Besides the abstract and applied science embodied in this work, a large number of formulæ are contained in it, including many, which though not official, are more or less valuable and in use.

As an inducement to Subscribers to complete their sets as far as possible, the Committee offer the back volumes to the 24th inclusive, at the reduced price of \$1.50 each, nett.

The volumes 25 to 38 inclusive, except the 28th and 29th volumes, are held at the publishing price, 3.00, unless a full set is taken, in which case they will be supplied at \$2.50 per volume.

The Committee offer the publication price in money for the 4th number of the 1st volume, published January, 1830; for the complete 2d volume, commencing April, 1830; for the complete 3d volume (1831); for the complete 5th volume, 1833, and for the complete 7th volume, commencing April, 1835. They will also be glad to receive and pay for the January and July numbers of 1857, for the March number, 1856, for the 37th volume, (1865,) and for the January number, 1866.

CHARLES ELLIS,
Prof. JOHN M. MAISCH,
ALFRED B. TAYLOR,
Prof. EDWARD PARRISH,
W. PROCTER, JR.,

} Committee.

THE
AMERICAN JOURNAL OF PHARMACY.

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NOVEMBER, 1867.  
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MINUTES OF THE FIFTEENTH ANNUAL MEETING OF THE
AMERICAN PHARMACEUTICAL ASSOCIATION, 1867.

The Fifteenth Annual Meeting of the American Pharmaceutical Association commenced its sittings at the University Building, in the city of New York, on Tuesday, Sept. 10th, 1867. First Vice President, Prof. Edward Parrish, of Philadelphia, in the Chair; John M. Maisch, Secretary.

Prof. Parrish read a letter from President Stearns, which stated that it would be impossible for him to attend the meeting, owing to the ill condition of his health.

The Chairman appointed the following Committee on Credentials: Robert J. Brown, Leavenworth, Kansas; M. M. Selfridge, Bethlehem, Pa.; C. Lewis Diehl, Louisville, Ky. The Committee retired to examine the credentials, pending which the members present were requested to register their names.

A communication was received from the Long Island Historical Society, inviting the members of the Association to visit their rooms, and offering the use of their library and reading room to the Association.

On motion of the Business Committee, the Permanent Secretary was requested to return the thanks of the Association to the Long Island Historical Society.

The Committee on Credentials reported the following delegates accredited to this meeting,—viz.:

From the Maine Pharmaceutical Association.—Charles K. Partridge, Henry T. Cummings, M. D., Edmund Dana, Jr., John G. Cook.

From the Massachusetts College of Pharmacy.—Charles A. Tufts, Geo. F. H. Markoe, H. W. Lincoln, Samuel M. Colcord, A. P. Melzar.

From the College of Pharmacy of the City of New York.—James S. Aspinwall, George C. Close, William Neergaard, William Wright, Jr., William Hegeman.

From the Philadelphia College of Pharmacy.—Edward Parrish, James T. Shinn, H. N. Rittenhouse, A. B. Taylor, E. T. Ellis.

From the Maryland College of Pharmacy.—J. B. Baxley, Wm. S. Thompson, J. F. Hancock, J. J. Thomsen, J. C. Leamy.

From the Pharmaceutical Association of the District of Columbia.—G. G. C. Simms, John A. Milburn, J. N. Callan, J. Stanley Jones, Chas. E. Callan.

From the Cincinnati College of Pharmacy.—E. S. Wayne, W. E. Reifsnider, A. M. Johnson, A. Foertmeyer, W. J. M. Gordon.

From the Chicago College of Pharmacy.—E. H. Sargent, Philip L. Millemann, C. Lewis Diehl, John Burrell, Robert J. Brown.

From the Alumni Association of the Philadelphia College of Pharmacy.—Thomas S. Wiegand, C. L. Eberle, Wm. C. Bakes, Henry Bower, W. W. Mullen

On motion, the report was accepted.

On motion of Alfred B. Taylor, it was unanimously

“*Resolved*, To invite the Professors of the College of Pharmacy and of the Medical Colleges of this city, also the medical profession in general, to seats in the present meeting.”

The Executive Committee presented the following gentlemen as candidates for membership in the American Pharmaceutical Association, they having complied with the terms of the Constitution:

Chas. K. Partridge, Augusta, Me.	William Wynn, Brooklyn, N. Y.
H. H. Hay, Portland, Me.	Thos. Lewis, “ “
Luther L. Jenkins, Boston, Mass.	Jos. P. Remington, “ “
Wm. F. Nowell, “ “	F. C. Mussgiller, “ “
Frederick Hoffmann, N. Y. City.	Bernard Goodman, Yonkers, N. Y.
John W. Gilmore, “ “	John A. Vandegrift, Burlington,
John McKessonir, “ “	N. J.
David Hays, “ “	Jas. M. Harner, Jersey City, N. J.
Herschel Parker, Brooklyn, N. Y.	Wm. R. Laird, “ “
Jas. H. Ollif, “ “	W. B. Abell, Philadelphia, Pa.
C. N. Stirling, “ “	Louis J. Bauer, “ “
Ambrose C. Snyder, “ “	Henry Cramer, “ “

Augustus Everhart, Philada., Pa.	J. C. Boreherdt, Chicago, Ill.
Decatur Milligan, " "	J. W. Ehrman, " "
Wm. H. Webb, M.D., " "	W. Austin Joyce, " "
Thos. J. Casper, M.D., " "	Chas. K. Jones, Louisville, Ky.
John Heyl Raser, Reading, " "	E. T. Porter, Junction City, Kansas.
P. M. Ziegler, " "	Jacob Krummeck, Santa Fe, New Mexico.
M. C. Morgan, Pittsburg, " "	F. C. Herbruger, Panama, Central America.
Danl. B. Street, Centreville, Md.	Henry R. Gray, Montreal, Canada.
Danl. P. Hickling, Washington, D.C.	Nathan Mercer, " "
R. B. Ferguson, " "	Thomas Lawrence, Hamilton, Canada.
R. S. Drake, Piqua, O.	Geo. W. Morgan, Jr., St. Thomas, Canada.
Jas. C. Meseroll, Jackson, Mich.	
Jas. W. Backus, Marine City, Mich.	
Alf. A. Dunk, East Saginaw, " "	
John H. Ehlers, Auburn, Ind.	

A ballot being ordered, the Chairman appointed Ferris Bringham, of Wilmington, Del., and Thomas H. Barr, of Terre Haute, Ind., to act as tellers; who reported their unanimous election.

The roll of members was then called, and those present recorded.

The standing and special committees being called upon to report, the following were read by title, and laid on the table for future action,—viz.:

Reports of the Executive Committee and Permanent Secretary;

Report of the Committee on the Progress of Pharmacy;

Report of the Committee on the Drug Market;

Report of the Committee on Scientific Queries;

Report of the Committee on the Internal Revenue Law;

Report of the Delegates to the International Pharmaceutical Congress, held at Paris, Aug. 21, 1867.

The reading of the report of the Executive Committee was postponed until the beginning of the second session.

The Chairman, Prof. Parrish, presented to the meeting the following works, which had just been received,—viz.: Proceedings of the British Pharmaceutical Conference; Exhibition of objects relating to Pharmacy, held at Nottingham, 1866; Pharmaceutical Ethics, by Joseph Ince. The Permanent Secretary presented, from the author, Dr. Flückiger, President of the

Swiss Apothecaries' Association, Lehrbuch der Pharmakognosie des Pflanzenreiches (Pharmacognosy of the Vegetable Kingdom).

The appointment of a Nominating Committee being in order, the following members were appointed to that duty :

New York College,	. . . . .	George C. Close.
Maine Pharmaceutical Association,	. . . . .	Charles K. Partridge.
Massachusetts College,	:	H. W. Lincoln.
Philadelphia College,	. . . . .	A. B. Taylor.
Maryland College,	. . . . .	J. C. Leamy.
Pharm. Assoc. Dist. of Columbia,	. . . . .	James N. Callan.
Cincinnati College,	. . . . .	W. J. M. Gordon.
Chicago College,	. . . . .	E. H. Sargent.
Alumni Assoc. Phil. Coll. Pharm.,	. . . . .	Thos. S. Wiegand.
By the President, from	} the meeting at large.	Chas. H. Dalrymple, N. J.,
		W. H. Saunders, London, C. W.,
		P. C. Candidus, Aberdeen, Miss.

The Chairman of the Business Committee gave notice relative to proposed changes in Article II., Sections 4 and 8 of the Constitution, having in view the improvement of the financial condition of the Association. The proposition, under the rules, lies over until a future sitting.

Dr. Squibb moved that when the meeting adjourned, it be till 9 o'clock to-morrow morning, which was carried.

Vice-President Parrish now read the Annual Address of the President.

TO THE AMERICAN PHARMACEUTICAL ASSOCIATION : -

Gentlemen.—It is my pleasant duty, at this our fifteenth annual reunion, to offer you a word or two which custom and propriety shapes into an address from your chief retiring officer.

I recall, with mingled sentiments of wonder and gratitude, the interval which has elapsed since we last met in this city, and in this very hall. Wonder at the magnitude of the struggle which has engaged us as a people during that interval, gratitude for the result of that struggle, in uniting more firmly those elements of true national strength calculated to make ours a strong and enduring republican nationality.

In 1860, the year of our last meeting here, we were, as we now are, at peace ; then fraternizing with us were valued members from the Carolinas to Texas. Who of us have seen them since ? To day I hope to

grasp their hands once more, with double welcome, and a cordial sympathy, at least, in all earnest desire to promote the good of our chosen art.

Death has been busy in our ranks since 1860,—so much so, that the gain in numbers of members from this State, since, is not equal to the loss thereby. From the proper Committee you will learn of those who have left us since last we met. It is only proper for me to here bear respectful testimony to the untiring activity and courtesy of John Meakim, in executing the arrangements, social and otherwise, at that session of 1860.

The enlarged sphere of action naturally assumed by this Association since its inception,—as all questions relating to our art, in national polity, and affecting our interests nationally, of necessity fall into our hands for discussion and fostering care or development,—it is evident that the objects and duties of this Association must bear, henceforth, the same relation to the local Associations, and to the individual pharmacist, as does the general government to the local government and to the citizen.

Take the subject of internal revenue, wherein, aside from the tariff on foreign goods, the necessity of the time calls for a levying of specific and stamp taxes upon the various products of national industry; it becomes the manifest duty of this Association,—the only national representative of our art,—to use its influence and knowledge to place before the proper authority with whom lies the tax-placing power, such facts, statistics, and knowledge, as will tend to render our portion of the public burthen just and equitable.

At the meeting in Detroit, 1866, a Committee on Internal Revenue (the forerunner of a permanent one, it is to be hoped) was appointed to consider and act upon the whole subject of the internal revenue law. The appointment of such a committee was judicious, but unfortunately it was directed that your President should act as chairman of the Committee. Now as committee work is usually done by the chairman, and as the chairman in this instance resided far from the commercial and government centres, it was as good as an effectual shelving of the Committee. Your President, after appointing the members of the committee as required, resigned the chairmanship to one of them,—Mr. Parrish,—from whom I presume you may expect a report.

My suggestion is, in regard to the working machinery on this revenue business, the appointment of a committee, with the chairmanship at least continued or permanent; the chairman a resident of either Washington, Philadelphia, New York city or Boston; and the raising of sufficient special revenue to meet inevitable expenses attending the work of such a committee.

The above naturally leads me to the subject of our treasury and income. The report of the Treasurer of the Association will show you that the Association is in debt, and for years it has had to anticipate the resources of the future to cancel the obligations of the past. This is not as it

should be ; aside from the obloquy it casts upon us as individual members of the Association, it seriously embarrasses its officers and representative committees ; and I wish distinctly to impress upon you that I believe our financial condition, and the settling of the question of fees and dues from members, to be the most important and vital subject for consideration and settlement before you at this meeting. Our independence, success, influence and dignity depend upon a treasury amply and promptly supplied with means to cancel its obligations, and extend its influence for good. You will remember the embarrassments arising from an empty treasury rest personally only on your permanent officials, and it is not just to them that, with hard work and no considerable pay, they should be placed in any such anomalous position. Moreover, if the Association expects to extend and make available its influence in correcting any abuses we as a craft may labor under, the result of unequal taxation, it must consent to tax itself freely in money. The duties of the Treasurer and Permanent Secretary, and of future possible permanent officers, are and will be so arduous, that no members can afford to accept them, requiring as they do such sacrifices of time and labor, without an approach to adequate pay.

Your Executive Committee, I believe, are prepared in their report with several plans with a view of increasing the revenue. My own idea is that we begin a yearly income of not less than \$3000, and as near \$5000 as may be, to be raised by increasing the yearly dues to \$5.00, the entry fee to \$5.00, and the certificate \$5.00 or \$10.00 ; the payment of the debt now uncanceled to be raised by subscription among those most active members who have the welfare of the Association at heart.

I favor the repeal of Section eight, Article second of the Constitution, relating to ten-year members.

While the Permanent Secretary has a very small remuneration, the Treasurer has none, save traveling expenses. The labor of this office is constantly growing, and is performed now only at the almost entire sacrifice of the leisure of the occupant. It is desirable that the office could remain in the hands of the same member year after year, for obvious reasons ; yet you will soon find no competent member willing to undertake the labor for nothing but the honor thereof.

From the report of the Permanent Secretary you will learn, among other interesting matter, that your executive officers delegated representatives of the Association to attend the session of the Congress of European pharmacutists in Paris, in August, and it is hoped we shall have them returned to us in time to report in person the results of that Congress.

You will find the report of the Committee on the Progress of Pharmacy fully as extended and elaborate as have characterized former ones. The reporter of that Committee has taken much pains to avoid simple reference to subjects, in most cases having concisely given the most im-

portant information relating to those quoted. This, while there are less subjects referred to, renders it more valuable, and extends its length to about the length of that of last year.

The chairman of this Committee, and his predecessor, both suggest that this committee be made permanent. This I am not prepared to favor, on account of the fact that the investigation of scientific subjects, and committee work like that on the progress of pharmacy, brings with it to the worker such a benefit of instruction, gratification and honor (when honorably done), as to fully compensate the member concerned, and that such labor should annually be re-distributed to others.

You will find the report of the Committee on the Drug Market replete with details of the foreign imports of our country, their values, articles rejected and reasons for rejection, together with such other collateral information, calculated to afford value to the report!

I would further suggest that a committee of not less than five members be appointed to arrange and present an exhaustive report on the articles exhibited by members of the Association and others, which exhibition is unusually full this year.

In closing this message, I have only to add that I have indicated those points of interest most vital to our continuance as a society; to your harmonious deliberations I now entrust them, and, in retiring from my position, I tender you my thanks for the honors this position has conferred, and the hearty assurance of my desire to coöperate with you in all efforts to further our professional interests and welfare.

FREDERICK STEARNS.

On motion, the address was referred to the Business Committee, so that the suggestions it contained may be brought forward for subsequent action.

On motion, then adjourned.

Second Session.—Wednesday, Sept. 11th.

Vice-President Edward Parrish called the meeting to order at 9½ o'clock, A. M. The Secretary read the minutes of the first session, which were adopted.

The Report of the Executive Committee was now read by Thomas S. Wiegand, Chairman, followed by the supplementary Report of the Permanent Secretary, Professor Maisch; both of which were accepted.

[These Reports inform the Association that the Proceedings for 1866 were issued in January of the present year,—six weeks earlier than the preceding volume,—and that the delay was partially due to an empty treasury. The cost of publishing

the 14th volume has been \$1160. As the election of members in the interim has been abolished, no endeavors have been made to extend the membership. Death has removed nine of the members during the past year, so far as the Committee are informed,—viz.: James H. Anderson, M. D., and Henry King, of New York city; James B. Lane, of Fitchburg, Mass.; Wm. B. Little, formerly of Boston; Thomas Farrington, of Boston; James L. Polhemus, of Sacramento, Cal.; Jesse M. Sands, of New York; Thomas A. Sweetser, of South Danvers, Mass.; and H. A. Scully, of Pittsburg, Pa.

The Report of the Permanent Secretary relates chiefly to the Proceedings, the expenses of the distribution of which amounted to more than one hundred and fifty dollars. There were three resignations of membership, and thirty-one dropped from the roll on account of delinquency in payment of dues.]

The Treasurer, Charles A. Tufts, now read his annual report and statement [from which we learn that the receipts during the past year from all sources, including the balance on hand at last report, amounts to \$2013.99, and the disbursements during the same period amount to \$1590.60, leaving a balance in the treasury of \$423.39 to meet the current expenses of the ensuing year. The Treasurer urges the necessity of prompt and efficient action in raising a larger revenue, so that the officers of the Association shall be able to conduct the labors of publication in a prompt and honorable manner].

The Report was referred to Henry Haviland, of New York, J. Faris Moore, of Baltimore, and A. P. Melzar, of Boston, to be audited.

The Nominating Committee presented a report, containing the following nominations of officers for the ensuing year:

For President,

Dr. E. R. SQUIBB, Brooklyn, N. Y.

For Vice-Presidents,

1st. ROBERT J. BROWN, Leavenworth, Kansas.

2d. WILLIAM A. JENNINGS, Baltimore, Md.

3d. DANIEL HENCHMAN, Boston, Mass.

For Treasurer,

CHARLES A. TUFTS, Dover, N. H.

For Permanent Secretary,

PROF. JOHN M. MAISCH, Philadelphia, Pa.

Executive Committee,

THOMAS S. WIEGAND, Chairman, . . . Philadelphia, Pa.

JAMES W. MILL, Chicago, Ill.

WILLIAM WRIGHT, Jr., New York.

W. J. M. GORDON, Cincinnati, O.

Prof. JOHN M. MAISCH, ex officio, . . . Philadelphia, Pa.

Committee on the Progress of Pharmacy,

C. LEWIS DIEHL, Chairman, . . . Louisville, Ky.

N. GRAY BARTLETT, Keokuk, Iowa.

G. F. H. MARKOE, Boston, Mass.

Prof. P. W. BEDFORD, New York.

Local Secretary., ex officio.

Committee on the Drug Market,

DANIEL C. ROBBINS, Chairman, . . . New York.

JAMES T. SHINN, Philadelphia, Pa.

HENRY W. FULLER, Chicago, Ill.

J. JACOB THOMSEN, Baltimore, Md.

SAMUEL M. COLCORD, Boston, Mass.

Committee on Scientific Queries,

Prof. W. PROCTER, Jr., Chairman, . . . Philadelphia, Pa.

Prof. EDWARD PARRISH, Philadelphia, Pa.

G. G. C. SIMMS, Washington, D. C.

Business Committee,

ALFRED B. TAYLOR, Chairman, . . . Philadelphia, Pa.

JAMES T. KING, Middletown, N. Y.

GEORGE C. CLOSE, Brooklyn, N. Y.

Pending the consideration of the motion of acceptance of the Report, Dr. Squibb stated that Prof. Procter, who had not yet returned from Europe, in a letter addressed to him had expressed the desire of being relieved for the present year from all services on committees. In regard to himself, he felt constrained for various reasons to decline the nomination for President.

The Nominating Committee then withdrew their Report, and returned it with the following alterations:

For President,

JOHN MILHAU, New York City.

Committee on Scientific Queries,

Prof. E. PARRISH, Chairman, . . . Philadelphia, Pa.

G. G. C. Simms, Washington, D. C.

Prof. J. M. MAISCH, Philadelphia, Pa.

Business Committee,

Dr. E. R. SQUIBB, Chairman, . . . Brooklyn, N. Y.

JAMES T. KING, Middletown, N. Y.

GEO. C. CLOSE, Brooklyn, N. Y.

On motion, the Report was accepted as amended.

Pending a motion to proceed to ballot for President, an amendment was offered by T. A. Lancaster, of Philadelphia, to ballot for all the officers at once, which was lost, and the original motion adopted.

The Chair appointed J. J. Thomsen, of Baltimore, and W. J. M. Gordon, of Cincinnati, O., tellers, who reported the unanimous election of John Milhau, of New York, as President for the ensuing year.

During the action of the tellers, the Business Committee gave the usual notice for a proposed alteration in Article II., Section 1st of the Constitution, contemplating the eligibility of Professors of Pharmacy, Materia Medica, Botany and Chemistry for membership in the Association; which lies over for action at a future session.

It was then moved and carried unanimously that the Chair be directed to deposit an affirmative vote for the remaining officers mentioned in the report, after which the tellers reported their unanimous election to serve the ensuing year.

The Chair appointed Henry T. Kiersted, of New York, and Dr. E. R. Squibb, a committee to conduct the President elect to the chair. Whilst this duty was attended to, the members arose, and listened standing to the remarks of President Milhau, and to the words of welcome to New York, extended by him to the visiting members.

The Business Committee moved the thanks of the Association to the retiring President, Frederick Stearns, and the other officers of the past year, for the efficient performance of their respective duties ; which was carried unanimously.

The Report of the Committee on the Progress of Pharmacy being called for, the Chairman, C. Lewis Diehl, read extracts from it, and explained its general arrangement, which is similar to those of preceding years. The Report was on motion accepted, and referred to the Executive Committee for publication.

The Chairman, Wm. A. Brewer, read the Report of the Committee on the Drug Market, followed by a supplementary Report by Samuel M. Colcord. Both papers were accepted, and referred for publication.

A discussion occurred regarding the adulterations noticed during the past year, namely, spurious assafoetida and myrrh, adulterated volatile oils, cream of tartar, and other drugs and commodities; also on government sales of highly adulterated drugs which had been captured during the late war.

The Chairman of the Business Committee read a communication from Messrs. Perkins, Stern & Co., importers of California wines, inviting the Association to visit their establishment. The reading of the Report on Queries was deferred.

Prof. Edward Parrish read the report of the Committee on the Internal Revenue Law, of which President Stearns was Chairman, which was accepted and referred for publication. A spirited discussion ensued on the burden imposed on legitimate pharmacy by the high tax on alcohol, and on the frauds perpetrated on the government in the collection of this tax; suggestions were advanced showing how relief may be obtained.

The Chairman of the Business Committee stated that at least one member who had been deprived of the benefits of the Association during the late war had not received the circulars issued by the Secretary; he therefore moved that to all such members the provisions of the resolution in regard to them, passed at the fourth session of the fourteenth annual meeting, at Detroit, be extended, so as to give them time until

the close of the present meeting to perfect their membership. The motion was carried unanimously.

On motion, the Association adjourned until 3 o'clock, P. M.

Third Session.—Wednesday afternoon.

President John Milhau in the Chair.

The reading of the minutes was dispensed with.

The Secretary read the report of Messrs. Procter and Faber, delegates of this Association to the International Pharmaceutical Congress, which had been held at Paris, August 21st to 24th. The report was accepted, and referred for publication. Regarding the death of M. Guibourt, which is mentioned in the report, Prof. Parrish remarked that the members of this Association, on learning through our delegates to the late Pharmaceutical Congress at Paris of the death, during the sessions of that body, of that eminent savant M. Guibourt, the veteran pharmacologist, are impressed with profound regret at the loss of one so closely connected with the progress of our profession, and to whom pharmacists throughout the world are so largely indebted.

The Executive Committee brought forward the following names for membership :

Chas. H. Bassett, Boston, Mass.	John M. Cunningham, Wilmington, Del.
Chas. I. Eaton, " "	John Dixon, Wilmington, Del.
Wm. B. Tower, " "	Chas. Shoemaker, Wilmington, Del.
Thos. J. Connor, " "	Edw. McInall, Jr., " "
Chas. B. R. Hazeltine, Boston, Mass.	Benj. Shoemaker, Jr., " "
Geo. P. Kettell, Charlestown, "	John H. Simms, M.D., " "
Geo. A. Stuart, M.D., " "	Charles E. Ferris, M.D., Newcastle
Wm. Warren, Brighton, "	Del.
Augustus Goecke, New York City.	M. H. Donavin, Baltimore, Md.
John A. Dunn, Brooklyn, N. Y.	Geo. F. Danattel, " "
Emil Heydenreich, " "	C. A. Lampanius, " "
Alfred I. Tartiss, " "	Chas. S. Tilyard, " "
S. T. Jones, Philadelphia, Pa.	Charles Cons. Callan, Washington,
H. C. Archibald, Philadelphia, Pa.	D. C.
I. W. Smith, " "	Wm. P. Geiger, Canton, O.
Jas. T. Borhek, Jr., Bethlehem, "	W. P. H. Barr, Alliance, O.
Wm. S. Sieger, South Bethlehem, "	Geo. B. McPherson, Cincinnati, O.
Richard Frohwein, Elizabethport,	
N. J.	

On motion, a ballot was ordered, Messrs. Frohrein and Green acting as tellers, who reported the unanimous election of the candidates.

The amendment to the Constitution, notice of which was given at the first session, and which contemplates the establishment of the finances of the Association on a sound basis, was called up, pending the consideration of which Prof. Maisch offered the following, seconded by Prof. Parrish:

Resolved, That the subject of the financial affairs of this Association be referred to a committee consisting of the Treasurer, the ex-Treasurers present at this meeting, the Chairmen of the Business Committee and of the Executive Committee, to report at a future session.

The vote being taken, a division was called for, when 18 votes were cast in the affirmative, and 14 in the negative, and the resolution carried.

The following amendment to the Constitution, notice of which was given at the second meeting, was brought forward:

Whereas, The Constitution now contains no provision for the membership of those teachers of pharmacy and chemistry who, as lecturers in the various colleges of pharmacy, or as teachers in any other way, have a close interest in the objects and designs of the Association, therefore,

Resolved, That Article II. Section 1 be amended by adding after the word "another" the words "and those teachers of pharmacy, chemistry and botany who may be specially interested in pharmacy and materia medica." The section will then read as follows:

SECTION 1. Every pharmacist and druggist of good moral and professional standing, whether in business on his own account, retired from business, or employed by another, and those teachers of pharmacy, chemistry, and botany, who may be specially interested in pharmacy and materia medica, who, after duly considering the objects of the Association and the obligations of the Constitution, are willing to subscribe to them, are eligible to membership.

On motion, the resolution was adopted without dissent.

Prof. Parrish read the report of the Committee on Queries, the consideration of which was postponed for the present.

The Auditing Committee reported that they had examined the Treasurer's accounts, and found them correct. The report was adopted and the Committee discharged.

The reading of special reports being called up, the subjects

of the following queries of last year were continued to the members who had accepted them:—No. 1, to George C. Close, of Brooklyn; Nos. 3, 23, to Samuel P. Duffield, of Detroit; No. 5, to Dr. E. R. Squibb, of Brooklyn; No. 7, to Ferris Bringhurst, of Wilmington, Del.; Nos. 14, 19, 30 and 36 to W. Procter, Jr.; 29 to Edward C. Jones, of Philadelphia; 32 to Dr. Thos. E. Jenkins, of Louisville.

The reading of reports in answer to queries 2, 6, 9, 13, 17, 20, 21, 22, 26, 33 and 35 was postponed. No reply was received in answer to queries 10, 11, 12, 18, 24, 25, 27, 28, 31, 34, 38, 41 and 42.

In answer to query 4, on the adaptability for medicinal purposes of dry wine made from grapes grown in the United States, Prof. Parrish, by request of Frederick Stearns, of Detroit, made some verbal remarks, to the effect that no native wine possessed sufficient alcoholic strength, and for this reason no native wine would answer the purpose, unless the addition of spirit was considered admissable.

A discussion on the culture of wine on the American continent engaged several of the members.

A motion to adjourn to hold an evening session was negatived.

An extract of a letter from Mr. Stearns was read by the Secretary, informing the Association of the manufacture of alcohol in Michigan from rhubarb wine, which by legal decision escaped the payment of internal revenue tax.

Mr. Colby, of New York, read an answer to No. 8, on honey, which was referred to the Executive Committee.

A paper by Charles Bullock, of Philadelphia, was read by Mr. Wiegand, in reply to No. 15, on *Veratrum Viride*, and referred for publication.

The President retiring, in the absence of the Vice-Presidents Charles A. Tufts was called to the Chair.

The Secretary read a paper in answer to query 37, on the presence of chrysophanic acid in senna, from Ferd. Sennewald, of St. Louis; also an answer to No. 16, by James W. Mill, on preparations of ergot, both of which were referred to the Executive Committee.

The Association then adjourned till 9 o'clock to-morrow morning.

Fourth Session.—Thursday morning, Sept. 12th.

The meeting was called to order at 10 o'clock by President Milhau, and the Secretary read the minutes of the second and third sessions, which, after correction, were adopted.

Alfred B. Taylor, on behalf of the Philadelphia College of Pharmacy, invited the American Pharmaceutical Association to hold its next annual meeting in the city of Philadelphia.

The Chairman of the Executive Committee presented the names of the following gentlemen for membership, they having complied with the requirements of the Constitution.

Jas. L. Scofield, New York City.	G. A. Zausinger, Louisville, Ky.
Henry Kimmel, " "	Ferd. J. Pfingst, " "
E. T. Dobbins, Philadelphia, Pa.	F. Sacksteder, " "
John B. Angney, " "	J. F. Llewellyn, " "
C. Rademacher, Louisville, Ky.	Norman Fletcher, " "
J. M. Krim, " "	Fr. Weisa, Jeffersonville, Ind.
J. M. Colgan, " "	

Messrs. Neergaard and Haviland acting as tellers, reported the unanimous election of the candidates.

The Committee appointed at the third session to report a plan for regulating the financial affairs of the Association, reported through Dr. Squibb, 1st, the plan proposed by the Business Committee at the first session, upon the main features of which the Committee had agreed unanimously; and, 2d, the retaining in the Constitution of the clause regarding life membership, but altering the conditions for obtaining the same.

It was now moved by Robert J. Brown, and seconded by Alfred B. Taylor, to abolish life membership for the future; after considerable discussion the vote was taken, when 45 members voted in the affirmative and 7 in the negative. The resolution was declared carried, more than three-fourths of the members voting for it.

It was then moved and seconded to increase the annual subscription to three dollars; the vote standing 54 ayes, the resolution was declared adopted, no votes being cast against it.

It was then moved to increase the fee for a certificate of

membership hereafter to five dollars, which motion was carried by a vote of 51 in favor, without any dissenting votes.

It was then moved that the certificate of membership shall require the signature of but one Vice-President, and that the Treasurer should sign it, both of which were adopted. The report of the committee as a whole was then adopted.

William A. Brewer, of New York, offered the following resolution, which, in compliance with his request, was for the present laid upon the table:

Resolved, That while we hold to a high appreciation of the beneficial influence of the accustomed social entertainments tendered to the members of this Association and their friends by the members of the drug trade in the various cities where the Association meets from time to time, and while we cherish with gratitude and thankfulness the good feeling which prompts these magnificent exhibitions of generosity, we cannot but hope that hereafter the solicitors of the contributions for such purposes may get permission from the donors to devote a moiety of said contributions to the endowment of a central library and a cabinet of materia medica and collateral matters, for the purposes and use of the Association.

A paper by Thomas Doliber, on the use of benzoin in ointments, which is supplementary to his paper on benzoinated lard, published in the Proceedings of 1866, was read by Dr. Squibb. This paper elicited considerable discussion, during which Ferris Bringham, of Wilmington, Del., spoke favorably of the preservative influence of yellow wax in ointments.

The Secretary read the following papers by Edw. S. Wayne, of Cincinnati:

On Bi-tartrate of Potassa, Tartrate of Potassa, and Tartaric Acid from American Tartar.

On Quicksilver, in North Carolina, from an ore containing $7\frac{1}{2}$ per cent. of metallic mercury.

On Mata, a leaf used by the Mexicans to flavor smoking tobacco, and emitting an odor resembling coumarin.

On American Opium, made by Dr. H. Black, of Bolivar, Tenn., from the White Poppy and yielding, by Riegel's method, 10.2 per cent. of morphia.

On Solution of Bi-meconate of Morphia.

On the inner coat of the gizzard of the South American Ostrich as a remedy for dyspepsia.

The subject of native wines, and the collection and purification of tartar deposited from them, was again discussed.

Evan T. Ellis read a paper on cryolite, and the use of this mineral for preparing soda. The paper was illustrated by specimens of cryolite and its products.

A paper was read by William Saunders, of London, Canada West, on the relative value of the rhizome and rootlets of *Podophyllum peltatum*. According to the author's results, the rootlets yield most resin.

G. G. C. Simms, of Washington, D. C., read a paper advocating the claims of Dr. Schaefer, of Washington, D. C., to the priority of the use of protoxalate of iron as a remedial agent.

The following papers, contributed by A. T. Moith, of Fish-kill Landing, N. Y., were read by Prof. P. W. Bedford :

On Lac Sulphur adulterated with 43 per cent. of dolomite.

On Sweet Spirits of Nitre, advocating Redwood's process as efficient and cheap.

On Bottles for holding Poisons, designated by coating their necks and shoulders with black varnish.

The several volunteer papers read at this session were accepted, and referred for publication.

On motion, the Association adjourned until 3 o'clock, P. M.

Fifth Session.—Thursday afternoon, Sept. 12th.

The meeting was called to order at 3¼ o'clock, President J. Milbau in the Chair. The reading of the minutes was dispensed with.

The Executive Committee brought forward, as a motion, the suggestion of President Stearns to make a standing committee on the internal revenue law, which was negatived.

The Business Committee moved that the Treasurer for the ensuing year be paid the same salary as the Permanent Secretary, which was carried unanimously.

It was now suggested that the members present should sign, during the present meeting, one or other of the blanks as re-

quired by the resolution passed at the morning session, relative to life membership.

Philip L. Milleman, of Chicago, read a volunteer paper on hydrated sesqui-oxide of iron, in which the preservation of the same as an antidote to arsenic by means of glycerin is advocated. The paper elicited some discussion.

The same gentleman presented specimens of the rhizome and rootlets of *Hydrastis canadensis*, which had been prepared so as to resemble those of *Aristolochia serpentaria*, and which was sold in the New York market to a Chicago firm.

The Treasurer read a letter from H. T. Cummings, M. D., of Portland, Me., donating to the treasury of the Association ten dollars; he also stated that twenty dollars had been received by S. M. Colcord for the same purpose, and that several members had offered to send contributions on their return home.

Dr. E. R. Squibb read a volunteer paper on commercial jalap, showing the inferiority of many lots of this drug as it is met with in commerce.

The same member read a paper entitled "on repercolation as applied to the cinchonas."

It was moved and carried that all volunteer papers read at this session be accepted, and referred for publication.

A motion by Mr. Colby to take up the resolution of William A. Brewer, laid on the table at the fourth session, was, in the absence of Mr. Brewer, negatived.

The Secretary read a letter from Dr. Samuel S. Garrigues, of Saginaw, Mich., relative to query 24, in which he stated his inability to get sufficient data regarding the sources of supply of tar during the late war to justify his answering it. On motion, it was dropped from the list.

J. V. Heydenreich read an essay in answer to query No. 2, regarding the principle to which the diuretic power of cubebs is due, &c. The paper elicited some discussion relative to the preparation of oleo-resin of cubebs, and the stability of the volatile oil of cubebs.

The same author read a paper on the officinal formula for tincture of chloride of iron, in reply to query 17, which elicited an animated discussion.

The following names were brought forward by the Executive Committee for membership, as having complied with the By-Laws:

John Hooker, Springfield, Mass.	W. R. Schanck, Jersey City, N. J.
Geo. W. Bird, Brookline, "	Edwin McC. Boring, Philadelphia, Pa.
Geo. A. Copeland, Providence, R. I.	Jos. L. Shoemaker, Philadelphia, Pa.
Gottfried Hebblerling, N. Y. City.	J. A. Meyers, Columbia, Pa.
E. Fongera, " "	William Maurice Moore, London, Canada West.
C. F. Chandler, " "	Alex. Bain Petrie, Guelph, Canada West.
W. H. Whitney, " "	
Thomas L. Johnson, Cooperstown, N. Y.	

A ballot was ordered, Geo. C. Close and Theobald Frohwein, of New York, acting as tellers, who reported the election of the candidates.

An essay by Wm. Saunders, of London, Canada West, in answer to query No. 6, on the officinal compound decoction of sarsaparilla, was read by Mr. Markoe. The paper was illustrated by various specimens of the decoction.

Query 35, on tartrate of iron and potassa, was, on motion, continued to J. P. Babcock, of Boston, after which a paper on beeswax, its bleaching and its substitutes, by Mr. Babcock, was read by Mr. Markoe.

C. Lewis Diehl read a paper in answer to query 9, on syrupus senegæ, and showed numerous specimens of this preparation, made according to the method suggested.

The same author read a paper in reply to query No. 20, on colchicin, its isolation, and properties, in which the alkalinity of this principle is denied. The paper was accompanied by a handsome specimen of the principle, of a light yellow color, obtained from the seed.

The meeting then adjourned until to-morrow morning at 9 o'clock.

Sixth Session.—Friday morning, Sept. 13th.

The meeting was called to order by President Milhau. The minutes of the fourth and fifth sessions were read and approved.

The Executive Committee reported the names of the following candidates for membership:

Ernest Molwitz, New York City.
Geo. G. Sands, " "

W. H. C. Onderdonk, N. Y. City.
Adolph Kirsten, Jersey City, N. J.

A ballot being ordered, Messrs. Neergaard and Shedden, acting as tellers, reported their unanimous election.

The Business Committee laid before the meeting several letters from Mr. J. L. Hunnewell, of Boston, relative to being reinstated in membership. After a discussion of the subject, the Association declined the course of action desired by Mr. Hunnewell, by a unanimous negative vote.

The subject of selecting a place for the next annual meeting being brought forward, a letter was read from Mr. Robert J. Brown, "inviting the Association to hold its next annual meeting in the city of Leavenworth, Kansas, in consideration of the easy access to that central portion of the United States, its close proximity to the plains, and in view of the opportunity of enjoying the exciting sport of a buffalo hunt."

It was moved that when we adjourn, we adjourn to meet in Philadelphia on the second Tuesday in September, 1868, which motion was unanimously carried.

Alfred B. Taylor was nominated for Local Secretary, and unanimously elected by ballot, Messrs. Frohwein and Krehbiel acting as tellers.

The Business Committee presented the following :

Whereas, It is recognized as a prominent means by which this Association hopes to increase its public usefulness as a national Association, to urge upon our legislatures the importance of a judicious, but certain, determined, and, as far as practicable, uniform control of the practice of pharmacy in the various States; therefore,

Resolved, That the President and Executive Committee of the Association be authorized and instructed to offer any service which the Association can render to the various conventions for reforming State Constitutions, and to State Legislatures as opportunity may arise, wherein such bodies may consider the coopération of the Association either desirable or useful.

The Secretary offered an amendment, to substitute the words "other officers" for "Executive Committee," so as to read, "Resolved, that the President and other officers of this Association be authorized and instructed," &c.

The amendment was accepted, and, after some discussion, the resolution was carried.

The reports on scientific queries being called for, it was found that Numbers 10, 11, 12, 27, 31, 33, 34, 39, 42, 43 and 46 were not replied to.

Henry W. Lincoln, of Boston, read a long essay on query 13, relative to *Oleum Theobromæ*, illustrated by specimens of the fruit and oil, pure and adulterated, with samples of chocolates.

Prof. Wadgymar, of St. Louis, did not reply to query 21, on *Ricinus communis*, but offered in place of it a reply to query 27 of 1865, on *Hyosciamia*, which had not been reported on last year, owing to ill health. Professor Bedford read this paper, which was accepted, and referred for publication.

Query 22, on the physiological properties of the leaves of *Ricinus communis*, was continued to Mr. Heydenreich, of Brooklyn, his experiments having not yet been completed.

Query 26 was, for a similar reason, continued to Mr. Markoe.

Query 45, on the best form of apparatus for making pills, was replied to by Ferris Bringhurst, of Wilmington, Del. In connection with this subject, the author called the attention of the Association to a pill machine on exhibition by Mr. A. H. Wirz, of Philadelphia. Mr. Bringhurst also alluded to the great convenience of a tin box loaded with shot, as a counterpoise in shop weighing; and exhibited a bottle for keeping volatile oils, the bottle being encased with tin, some filtering paper being placed beneath the bottle, to absorb the oil which might escape over the lip. The same member exhibited a copper funnel, with movable conical wire frame, for facilitating filtration, the whole to replace glass funnels for many uses.

A general discussion ensued on filters and filtration.

The Executive Committee proposed the name of Edward H. Heintsh, of Columbia, S. C., for membership, when a ballot was ordered, and he duly elected.

The Business Committee presented a communication from the East River Medical Association, relative to physicians' prescriptions, which, from the lateness of the session, was, by motion of Mr. Tufts, laid over as unfinished business until next session.

Mr. Markoe exhibited a model of a powdering mill, on a new principle.

Dr. Squibb now read the report of the Committee on Queries, which was adopted, as follows :

QUERY 1st.—What is the quality, proportion of oxide of mercury, &c., in Hydrargyrum cum creta of commerce, selecting specimens recently prepared by manufacturers, and others from the dispensing bottles of pharmacists?

Accepted by Joseph P. Remington, of Brooklyn, N. Y.

QUERY 2d.—Is the officinal process for Acidum Hydriodicum the best that can be practically suggested?

Accepted by John A. Dunn, of Brooklyn, N. Y.

QUERY 3d.—What additions to Epsom salts will diminish its bitter and nauseous taste, without materially altering its properties? The answer to be accompanied by samples of solutions made by processes suggested.

Accepted by Isaac W. Smith, of Philadelphia, Pa.

QUERY 4th.—What are the sources and commercial history of Mexican Sarsaparilla, and how does it compare with other commercial varieties?

Accepted by Ferris N. Colby, of New York City.

QUERY 5th.—What are the facts in regard to the production of Oil of Camphor of Formosa? Is it a residuum from the manufacture of crude Camphor, and what are the causes of its comparatively high price?

Accepted by H. C. Archibald, of Philadelphia, Pa.

QUERY 6th.—To what extent is Chicory—*Cichorium intybus et alie*—introduced into commerce as a substitute for Taraxacum?

Accepted by G. F. H. Markoe, of Boston, Mass.

QUERY 7th.—What is the best mode of preserving and dispensing Chlorinated Lime to prevent its loss of Chlorine by exposure? with an examination of the composition of some old and damp specimens in the shops.

Accepted by G. C. F. Chandler, of New York.

QUERY 8th.—What is the nature of the crystalline deposit in Fluid Extract of Cloves, on long standing, made by the process of Professor Procter, reported to this Association? Is it present in the drug, or the result of the oxidation of the oil?

Accepted by F. Llewellyn.

QUERY 9th.—Is Coffee a useful antidote to organic poisons, as so generally stated? What is the *rationalé* of its action, to what extent may it be relied upon, and in what form is it best kept for use?

Accepted by Theobald Frohwein, of New York.

QUERY 10th.—Are the principles in Buchu, which are soluble in water and insoluble in alcohol, important medicinal constituents of the drug? and should they be retained in its pharmaceutical preparations?

Accepted by Thos. A. Lancaster, of Philadelphia, Pa.

QUERY 11th.—Is the so-called "Gelseminia" a neutral or alkaloid principle? Does it exist in the leaves and in the wood of the root, or only in the bark? and does it represent the activity of the plant?

Accepted by Charles L. Eberle, of Philadelphia, Pa.

QUERY 12th.—Is there any practicable method of separating Tannic Acid from tonic tinctures and infusions of which it is an incidental, and not an important constituent, so that they may be prescribed with the soluble salts of iron without becoming black?

Accepted by Theobald Frohwein, of New York.

QUERY 13th.—To what extent is competition a useful means in promoting pharmaceutical progress? what are the most common forms of abuse to which it is liable, and what are its proper ethical limitations?

Accepted by Samuel M. Colcord, of Boston, Mass.

QUERY 14th.—Would the adoption of a universal Pharmacopœia be an improvement upon the present system of national standards? and if so, how can it best be brought about?

Referred to Thomas Doliber, of Boston, Mass.

QUERY 15th.—What are the best reasons for and against the introduction of the metrical system of weights and measures into the United States for medical purposes, and for commercial use generally?

Accepted by J. F. Babcock, of Boston, Mass.

QUERY 16.—How far is Pharmacy entitled to rank as a profession, and what is its true position among the industrial pursuits?

QUERY 17th.—What is the best scheme of practical instruction for young men preparing for the business of pharmacists, aside from necessary service in the shop, with especial view to those who are unable to attend a College of Pharmacy?

Accepted by E. Parrish, of Philadelphia, Pa.

QUERY 18th.—What is the Morphia strength of commercial Powdered Opium, a number of samples, and what is the most ready means of determining it?

Accepted by P. W. Bedford, of New York.

QUERY 19th.—What is the Morphia strength of Sulphate, Muriate and Acetate of Morphia, respectively, as usually met with in commerce? and what is the most ready means of determining it?

Accepted by P. W. Bedford, of New York.

QUERY 20th.—What are the best practical tests for the purity of Bromide of Potassium?

Accepted by G. Krehbiel, of New York.

QUERY 21st.—What are the best tests for the purity of Carbolic Acid, and what are its most useful combinations and applications? also, what common name should be adopted for this article, as mixed with the other coal-tar alcohols associated with it?

Accepted by C. F. Chandler, of New York.

QUERY 22d.—What are the practical reactions between the Permanganates and Alcohol of various strengths and degrees of clearness, and how far can such reactions be made available for producing Deodorized Alcohol, Cologne Spirit, or clean Alcohol, upon the small scale, with special reference to the Alcohol recovered from Fluid Extracts and other Galenical preparations?

Accepted by G. F. H. Markoe, of Boston, Mass.

QUERY 23d.—What are the objections, if any, to the official process for Ferri et Potassæ Tartras? and is the salt of commerce practically identical with that of the Pharmacopœia?

Accepted by P. W. Bedford, of New York.

QUERY 24th.—The U. S. Pharmacopœia defines Valerianic Acid as having a sp. gr. 0.933. Is this sufficiently accurate for practical purposes? and if not, what standard should be adopted?

Accepted by F. C. Mussgiller, of Brooklyn, N. Y.

QUERY 25th.—From what sources in this country can metallic Bismuth be obtained, and to what amount are they rendered available?

Accepted by C. A. Tufts, of Dover, N. H.

QUERY 26th.—It is found that the process of the U. S. Pharmacopœia for Pyrophosphate of Iron yields a preparation which it is sometimes impossible to scale. Can a better process be devised?

Accepted by S. P. Duffield, of Detroit, Mich.

QUERY 27th.—What are the best and most economical means for ventilating the laboratory and shop of the pharmacist, so as to promote the health of the occupants, without too much expense of fuel in winter?

Accepted by H. T. Cummings, of Portland, Me.

QUERY 28th.—What are the causes of the variations in appearance of Blue Mass in commerce, very little of which is identical with that of the U. S. Pharmacopœia? Which of the ingredients is generally deficient?

Accepted by P. W. Bedford, of New York.

QUERY 29th.—Can any improvement be suggested in Syrupus Lactucarii, U. S. P. 1860?

Accepted by P. W. Bedford, of New York.

QUERY 30th.—Is there a rapid method by which suppositories can be prepared, whereby the use of a hardening ingredient in connection with cocoa butter will not be required?

Accepted by Chas. L. Eberle, of Philadelphia, Pa.

QUERY 31st.—Does the addition of metallic Iron or Zinc to ordinary Hydrochloric Acid which contains Sulphuric Acid as an impurity, decompose the Sulphuric Acid, and liberate Sulphide of Hydrogen?

Accepted by E. R. Squibb, of Brooklyn, N. Y.

QUERY 32d.—Does the lactescent juice of the indigenous *Lactuca elongata* possess properties similar to those of European *lactucarium*?

Accepted by John M. Maisch, of Philadelphia, Pa.

The Committee on Specimens were, on motion, permitted to finish their report and hand it to the Secretary next month, in time for the Proceedings.

The Business Committee offered the following:

Resolved, That the thanks of the Association are due, and are hereby offered to its local members and many others who, though not members, are understood to have been instrumental in the success and entertainment of the present annual Convention; also,

Resolved, That we thank our highly competent and careful reporter, Mr. Slade, for his successful efforts in our behalf, and those public reporters who have favored us with their presence and their public notices.

The resolutions were adopted without dissent.

The reading of the minutes being dispensed with, the Association, on motion, adjourned, to meet in Philadelphia on the second Tuesday of September, 1868.

BRITISH PHARMACEUTICAL CONFERENCE.

DUNDEE, SCOTLAND.

Editor of the American Journal of Pharmacy:

Esteemed Sir,—Herewith I enclose you an outline of the proceedings of the fourth annual meeting of the British Pharmaceutical Conference, which met at Dundee, Scotland, on the 4th and 5th of September.

The opening session was held Sept. 4th, at 10 o'clock A. M., in the rooms of the Ward's Chapel, under the presidency of Prof. R. Bentley, of London. The hall was very comfortably and tastefully fitted up, with specimens of rare chemicals and drugs, and much credit is due to the local committee for their very complete arrangements. The attendance was quite numerous. After the election of new members, the secretary read the report of the executive committee, the report stating that the numerical strength of the Conference was increasing satisfactorily, the number of members now being 478. The report also recommends the practice of Pharmacy limited to qualified persons only, and that it was necessary, in order to attain this result, that an appropriate examination should be enforced by legislative authority. After the reading of the financial report, by H. B. Brady, the Treasurer, the President delivered his inaugural address, the subject being "The advantages derived by the Phar-

maceutist from a knowledge of Botanical science." This was a continuation of one he had delivered at the Nottingham meeting last year. Having in the previous paper considered some of the more immediate and direct advantages which the pharmacist derived from a knowledge of Botany, Prof. Bentley on this occasion dwelt at length more particularly on its value as a mental training and healthful recreation; in the support of which he stated his own case. "There is no one that can appreciate its importance as a healthful recreation more than myself, for I commenced the study of Botany as a recreation, and for the pursuit of health, when both my bodily and mental powers had been weakened by a too laborious application to in-door pursuits. By its study I was led into the fields, where I speedily regained my health, and at the same time formed associations and friendships, some of which have lasted ever since, and to which I look back as among the brightest in my life."

The president was frequently applauded in the course of his excellent address, and at the close a hearty vote of thanks was awarded him by the meeting. The reading of the scientific papers was next taken up.

A paper entitled "The Adulterations of White Precipitate," prepared by J. B. Barns, was read by the Secretary. Mr. Barns has tested 61 samples, obtained through members of the Conference from 36 different towns. Of this number four only were adulterated. These contained as impurities carbonate of lead and carbonate of lime.

The Conference then adjourned till 2 o'clock.

Afternoon Session.

The Conference again met at 2 o'clock. Prof. Bentley in the chair. Scientific papers being in order, the first was read by Mr. Chas. Kerr, of Dundee, the subject being "A Case of Excise Interference in the Sale of Quinia Wine." In this case the officers of excise laid information against a chemist for having sold quinia wine without having a license for the sale of sweet wines, and the information was only withdrawn upon the condition that a license to sell sweet wines be annually taken out. It was shown that the preparation in question was one that was

official in the British Pharmacopœia. An animated discussion on the question took place, which resulted in the appointment of a committee to memorialize the Council of the Pharmaceutical Society for the purpose of endeavoring to bring about more satisfactory relations between chemists and druggists and the Board of Excise.

The next paper was read by Daniel Hanbury, F. R. S., of London, "On Burgundy Pitch." The author of this paper stated the difficulty there existed in finding a genuine article of Burgundy pitch in the market. The artificial that was usually met with, was produced by the admixture of some fatty body with resin, and working it with water, which gave it the required appearance. Mr. Hanbury gave the following as a test: Genuine Burgundy pitch dissolves in glacial acetic acid, forming a perfect solution. This is not the case with the artificial article.

A paper "On Jalap," by Mr. A. Southall, accompanied by sixteen specimens of commercial jalap root. These had been analysed by the author, showing their relative value in proportion of pure resin of jalap, compared with the market prices. In the discussion which arose on this topic it was stated that there was a remarkable resemblance between Tampico jalap and aconite root. A case was mentioned where a parcel of aconite root was mistaken for that of jalap. It was powdered and administered, producing fatal results.

A paper by Mr. G. Dymond, "On a True Citrate Magnesia," was read by the Secretary. The writer contended that it was morally wrong to sell a preparation purporting to be citrate of magnesia while they were well aware that there was very little of that ingredient in the preparation.

A paper on the employment of nitric acid sp. gr. 1.5 in Pharmacy, and another on the nitro-hydrochloric acid of the British Pharmacopœia, by Mr. W. E. Heathfield, were read by the Secretary.

The meeting then adjourned till Wednesday, at 10.30 A. M.

Wednesday. Second Day's Proceedings. Third Session.

The Conference resumed its sittings at 10.30 A. M., Prof. Bentley presiding. The following papers were read: "On a

New Alcoholmeter," by Mr. R. Reynolds. This instrument is a French invention, and acts on the principle of capillary action. "Notes on the Use of the Microscope and its Crystallographic Application," accompanied by numerous diagrams, by Mr. W. W. Stoddart. An interesting paper "On the Electrical Resistance of the Fixed and Volatile Oils," by Mr. T. T. O. B. Warren. A paper by Mr. T. B. Groves, "On Glycelæum a Substitute for Plasmas and Ointments," prepared by using the emulsion of oily seeds, mixing with it glycerine and oil. A very valuable and interesting paper "On Tinctura Opii and Liquor Opii Sedativus," by Mr. A. Southall, the author giving the result of analyses of nine samples of commercial tincture of opium, thereby showing the diversity existing in the preparation in its relation to strength in morphia. Mr. E. C. C. Stanford made remarks "On a Specimen of Sea Weed Char," in relation to its superiority to that of bone black as a discolorizer, and to that of charcoal in deodorizing. Mr. Daniel Hanbury, F. R. S., of London, made some very interesting and instructive remarks upon the specimens of drugs on exhibition at the rooms, which had been contributed by the Edinburgh branch of the Pharmaceutical Society, through its honorary Secretary, Mr. John McKay. A number of papers that were announced to be read had not yet come to hand. They will be published in the Pharmaceutical Journal. The subjects treated in the different papers gave rise to interesting discussions, and votes of thanks were awarded to the respective authors. The President laid on the table a copy of the Proceedings of the American Pharmaceutical Association for 1866, which had been presented by the Secretary, Prof. John M. Maisch, of Philadelphia. Also a volume of the "Laboratory," which had been kindly presented to the Conference by the editor, J. C. Brough, F. C. S., of London.

According to an invitation from the chemists and druggists of Dundee, the members of the Conference again assembled on Friday morning, at 8 o'clock, to make "An Excursion and Picnic to Craighall," a romantic spot twenty-two miles north of Dundee. The excursion was made in open carriages, along a route comprising beautiful scenery of a romantic nature. Craighall is a most picturesquely situated mansion, being built on the

top of a perpendicular rock, 200 feet high, on the banks of the river Ericht.

Having spent several hours in strolling about the beautiful grounds, the company assembled in a group, and a photograph was taken by an artist of Dundee. After this a sumptuous dinner was served up at Craighall, Mr. Russell, of Dundee, presiding. On returning home we stopped at Coupar Angus, where the company sat down to tea at the hotel Royal. Thence again took the road, reaching Dundee about 10 o'clock P. M., all highly delighted with this pleasant trip. Not enough praise can be awarded to the Arrangement Committee of Dundee for the manner in which they received and provided for the comfort of the non-resident members of the Conference.

Respectfully yours,

ALBERT G. EBERT.

ON HIVE SYRUP AND ON DIALYSIS.

BY LUDWIG RIEDERER.

In your March number, 1867, is an essay "On Hive Syrup," by L. W. Gillespie, Laboratory, Dearborn St., Chicago (extracted from the *Druggists' Circular*), which induces me to make a few corrections thereon, because the erroneous use of the important chemical process of "dialysis" would produce consequences not to be foreseen; and an incorrect remark, made in the final part of his essay, "on the inaccuracy of the process," tends to diminish, in undeserved manner, the interest for this subject.

Dialysis, introduced not long ago into science by Graham (*Annalen der Chemie und Pharmacie* 121, 63), depends on the varying relations of bodies to animal membranes. One division of bodies, "Crystalloids," are able to pass through certain membranes, if in contact with them in solution—the other part, "Colloids," do not possess this quality. All crystallizable bodies belong to the first part; to the second those not able to crystallize, as glue, gum, dextrin, caramel, tannic acid, albumen, extractive matter, hydrate of silicic acid, etc.

The membrane must be a colloidal substance; for example,

animal skin, or, even better than that, vegetable parchment; which must be on the other side in contact with water. When the solution of a crystalloid is put in the dialyser, the crystalloid will pass through the membrane to the water on the opposite side, while a quantity of water corresponding to the dialytic equivalent will stream to that side on which the crystalloid was in the commencement of the operation.

This process will continue as long as solutions on both sides are not of the same strength.

Colloids, under the same circumstances, do not pass, or but slightly.

In the above-mentioned essay are the following lines, page 128, line 8th: "After the lapse of forty-eight hours, the water contained in the outer vessel will be found to have become quite *thick and syrupy*, owing to the presence of a large amount of gummy substances, which *first pass through the porous diaphragm*, and, dissolving in the surrounding water, leave behind the crystalline compounds, hardly a trace of which can be found in the water," etc.

From all this it is clear that, in making the experiment, the guiding idea was to remove by dialysis the fermentatives, as albumen, etc. The error committed herein was to suppose that the colloid would be in the outer liquid after dialysis, while, by their inability to pass through a septum, they could only be found in the inner liquid.

The fact that the outer liquid was thick and syrupy proves that the white porous ware employed is no dialyser, and consequently totally unfit for this experiment.

Mr. G. seems to have made the observation that the inner and outer liquid were not very different, as he says, last line page 127: "yet still a large amount of pectin and gum refused to pass through the dialyser."

By making the experiment in the right manner it would have resulted that, instead of the thick syrupy liquid he had outside, he would have received a light-colored one, containing the most part of the salts and efficacious constituents of senega and squill, which are crystallizable, while on the inner side he would have had the extractive and coloring substances, the albumen, etc.,

which would have made not only a very inefficacious syrup, but also liable to spoil, and the whole process would have been for nothing.

As the accurate results obtained by dialysis are known, and not contestable, the reproach made to the method recoils upon Mr. G. himself, and it is very strange that Mr. G. should throw aside the method of dialysis after having made but one experiment, and this one full of faults. A little more self-instruction in the principles of dialysis would not have been superfluous, and would have spared this criticism.

New York, Sept., 1867.

NOTE BY THE EDITOR.—An apology to our readers is perhaps due that this paper was reprinted without comment, as it is certainly obnoxious to the criticism of Mr. R., but its transfer was made under circumstances that may excuse the neglect. Assuming as fact the statement of Mr. Riederer that porous earthenware possesses no dialytic properties, it is a curious result that Mr. Gillespie found colloids in his diffusate without any (except a trace) of polygalic acid, a result directly the reverse of the dialytic action of Graham's septa, (starch, parchment, etc.) We have made no experiments with senega to test this point and mention it in passing as at least curious and worthy of notice, for if it be true that such a septum as porous earthenware will separate colloidal matter by osmotic action from well marked active principles like that of senega, it may be employed in the very case in question with propriety. In thus speaking it is with the hope that Mr. Gillespie (who appears to have misunderstood the process of dialysis) may resume the subject and, in view of the criticism of Mr. Riederer, repeat his experiments with parchment paper or other colloid septum, as well as with porous earthenware, and give us his results, which may prove interesting if he corroborates his own statement. In the period of twelve hours, during which this proof has been in our hands, we dialysed a mixture of an ounce of Syrupus senega U. S. P., mixed with twice its bulk of water, in contact with a pint of water, using good English parchment paper for a septum. The diffusate acquired a light yellowish color and the odor of senega,

with but very little, if any, of its peculiar irritant taste. It was not precipitated by sub-acetate of lead, but readily gave evidence of sugar. The result, though too hastily obtained to be relied upon, seems to indicate that polygalic acid does not readily pass parchment paper.

W. P., JR.

SPIRIT OF LAVENDER COMPOUND.

By WILLIAM B. THOMPSON.

I have been in the habit of preparing the Compound Spirit of Lavender by a process somewhat different from that of the U. S. Pharmacopœia. My formula obviates the process of percolation, and affords a more elegant, and at the same time an equally efficient preparation, without material modification of the officinal formula. If the employment of cinnamon and cloves in substance was with a view to securing astringency, then my process may be at fault; but I have always regarded the preparation as simply carminative, and knew that the respective oils would supply this property equally well, at least, if not better. I avoid also the use of red saunders, which every one knows is prone to deposit, and is certainly a nuisance as a coloring agent in any pharmaceutical preparation designed to be finished. I append the formula, which yields a transparent, richly-colored tincture:—

Take of Alcohol	6 pints.
Oil of Lavend. Flos.,	f3i.
Oil of Rosemary,	f3ii.
Oil of Cinnamon,	f3ss.
Oil of Cloves,	10 drops.
Water,	2 pints.
Cochineal,	ʒiiss.

Dissolve the oils in the alcohol, and to the solution add the water, in small portions, mixing thoroughly; finally add the cochineal, and after twenty-four or forty-eight hours, filter.

Philadelphia, October 7, 1867.

NOTE.—We print the communication of Mr. Thompson, but must accompany it with a few words of comment. The fact that compound spirit of lavender is used as an ingredient in Liquor

potassæ arsenitis, and that its peculiar officinal coloring matter is necessary to give that preparation its proper color, was one reason for not using the cochineal in constructing the officinal formula. Further, the percolation of the cloudy solution of the oils through the aromatics, in substance, clarifies it; and, as the aroma of the spices is nearly always more delicate than the commercial oils, the preparation is more agreeable in consequence. For these reasons we very much doubt the advantage of substituting this recipe for the officinal.—EDITOR AMER. JOUR. PHARM.

PHARMACY OF THE CINCHONAS.

By EDWARD R. SQUIBB, M. D., of Brooklyn, N. Y.

(Continued from page 414.)

The finished extract consists of about four-fifths alcoholic extract of the Cinchonas, and one-fifth Glycerin. The alcoholic extract of Red Cinchona contains in the four troyounces 262 grains of impure alkaloids, equal to about 336 grains of the crystallized sulphates; or about 65 grains of alkaloids, equal to 84 grains of sulphates to the troyounce. This gives for the finished extract (with the Glycerin) about 52 grains alkaloids, or equal to 67 grains of sulphates to the troyounce.

Made from the Yellow Cinchona, which contains over four per cent. of alkaloids instead of 3·4 per cent., the proportion will be over one sixth more, or about 64 grains impure alkaloids to the troyounce, and these mainly quinia, whilst in the Red Cinchona the quinia and cinchonina may be in nearly equal proportions. It will be sufficiently accurate for therapeutic application to consider such extracts as containing about the equivalent of 10 grs. of the sulphates of Cinchona alkaloids to the drachm, or half a grain in each three-grain pill, the form in which it would be most conveniently used. But it must be borne in mind that the alkaloids are not the only tonic constituents of such an extract, and it might perhaps be fairly assumed that in tonic effect a three-grain pill of such extract might equal a grain of Sulphate of Quinia or Cinchonina.

In some trials made with the oldest and hardest of these pills

yet accessible, even when these have been made harder by the addition of dry powder to the extract, they readily disintegrate in a few moments in the mouth or in water, and they would probably be found to be always promptly and easily soluble in the stomach, since the Glycerin is well known to be not only a preservative and a solvent, but also an efficient agent to prevent hardening by either oxidation or dessication. Indeed, the pills made from this extract seem to have the contrary tendency of becoming moist and soft in the hot damp weather, and this may prove an objection to the quantity of Glycerin used.

The principal objection, however, to the general use of such an extract will be its cost, and the facility with which it may be cheapened without easy detection, since Cinchonas of low grade yield nearly as much extract as the higher. The neat cost of 7680 grains (163.), or practically 1½ lbs. Av. of good quality Cinchona in powder, to the pharmacist, can rarely be less than \$2.25 to \$2.75. The 21 or 22 f3. of alcohol actually expended can hardly cost less than 60 cents, and costs 75 cents if the duty be honestly paid, making a total of about \$3.00 for five troyounces, or about \$8.75 per lb. Av., without estimating for either the apparatus, fuel, time, labor, skill or profit. There are, however, a certain proportion of cases requiring Cinchona tonics, where the bitterness of any liquid preparation which is strong enough to be useful is so disagreeable, and even nauseating, as to obstruct or prevent the tonic effect; and these cases may render such an extract, or the one to be next considered, important.

Extractum Cinchonæ Compositum—Compound Extract of Cinchona.

Take of Cinchona, either Red or Yellow, in fine powder, sixteen troyounces.

Glycerin, one troyounce and one hundred and twenty grains.

Aromatic Powder, one troyounce.

Alcohol, six pints and ten fluidounces.

Water, a sufficient quantity.

Mix the Cinchona with thirty fluidounces of the Alcohol, by thoroughly stirring them together in a proper vessel, and pour

the mixture into a glass funnel prepared for percolation. Then pour the remainder of the Alcohol on top, as required, and follow this with water until the percolate becomes cloudy, and makes a precipitate in the receiving vessel. Then distil off the Alcohol from the percolate by means of a water bath, and stir the residue on the water bath until it becomes a thick extract weighing four ounces. To this add first the Glycerin, and heat the mixture, with stirring, until a perfectly uniform mixture is obtained. Then add the Aromatic Powder, and again stir very thoroughly. The finished extract should then weigh six and a quarter troy-ounces, or less, and each grain represents about two and a half grains of the Cinchona.

This compound extract is a very elegant preparation, and a therapeutic alternative for the fluid extract with aromatics, now much used, and to be mentioned hereafter. The working details are the same as in the case of the simple extract. As good Aromatic Powder is very essential to this preparation, that ingredient will be considered subsequently in another connection. This compound extract is about one-sixth weaker in alkaloids, but this deficiency is so nearly counterbalanced by the tonic and stimulant effect of good aromatics upon the relaxed and enfeebled conditions of the stomach so generally found where such tonics are required, that, like the wine in which they are commonly directed to be taken, they are not simply excipients, but powerful auxiliaries. The dose of this extract may therefore be considered as about the same as the simple extract—say one or two three-grain pills twice or thrice a day, just before meals, and followed by half a glass of good wine, or the wine taken with the early part of the meal. When preparations of iron are also indicated, the medicines should be alternated, but never mixed—the one being taken before one meal, and the other before the next. This plan, too much neglected, simplifies prescriptions, and avoids all question of incompatibility.

Extractum Cinchonæ Fluidum—Fluid Extract of Cinchona.

Take of Cinchona, either Red or Yellow, in fine powder, sixteen troyounces.

Take of Glycerin, eight fluidounces, or nine troyounces and two hundred and eighty grains.

Alcohol, six pints and ten fluidounces.

Water, a sufficient quantity.

Mix the Cinchona with thirty fluidounces of the Alcohol thoroughly, in a proper vessel, by stirring them together; cover the vessel, and allow the mixture to stand half an hour. Then transfer it to a glass funnel, prepared for percolation, and pour the remainder of the Alcohol on top, as required, following it with water after the last of the Alcohol has sunk below the surface, until the percolate becomes cloudy and makes a precipitate in the receiving vessel. Distil off the Alcohol from the percolate by means of a water bath, until the distillation has nearly ceased, or until the residue in the still weighs six troyounces or less. Add to this the Glycerin, and warm the mixture well in the water bath. Finally, cool the mixture, and make it up to the measure of a pint from the Alcohol recovered by the distillation, and agitate the whole well together. The weight of the pint of finished fluid extract will vary with the temperature at which it is weighed, and with the character of the Cinchona, from 8282 grs. to 8366 grs.; and each minim represents one grain of the Cinchona in a half minim of Glycerin, the remainder being Alcohol and water.

This fluid extract is almost black in color when seen in mass, but of a rich dark ruby red, approaching to garnet, when seen in thin strata by transmitted light, and is perfectly transparent. It is about the consistence of Simple Syrup at the same temperature, has the aroma of good Cinchona, and a clean, clear, bitter taste, much modified by the sweetness of the Glycerin. It makes a transparent solution with all proportions of Glycerin or Alcohol, and with all mixtures of the two. It also makes a nearly transparent solution with a mixture of equal parts of Glycerin and water, and with brandy and whisky, but makes a cloudy solution with wines.

The dose is from ten minims to a fluidrachm, according to the indications to be met by it, and it is best administered in a tablespoonful or more of sherry wine just before meals. It has been so used by a few physicians, for some months past, with

good effect, and is found in this limited use to be a convenient preparation, though not adapted quite so well to general uses as the one next to be mentioned.

Extractum Cinchonæ Fluidum Compositum—Compound Fluid Extract of Cinchona.

Take of Cinchona, either Red or Yellow, in fine powder, sixteen troyounces.

Glycerin, eight fluidounces, or nine troyounces and two hundred and eighty grains.

Compound Fluid Extract of Bitter Orange Peel, a sufficient quantity.

Alcohol, six pints and ten fluidounces.

Water, a sufficient quantity.

Mix the Cinchona thoroughly with thirty fluidounces of the Alcohol, in a proper vessel, by stirring them together; cover the vessel, and allow the mixture to stand half an hour. Then transfer it to a glass funnel prepared for percolation, and pour the remainder of the Alcohol on top, as required, following this with water, after the last of the Alcohol has sunk below the surface, until the percolate becomes cloudy, and makes a precipitate in the receiving vessel. Distil off the Alcohol from the percolate by means of a water bath, and stir the residue on the bath until it weighs five troyounces. To this add the Glycerin, and warm the mixture until it is uniform. Then cool it, and make it up to the measure of a pint with Compound Fluid Extract of Bitter Orange Peel, and agitate the whole well together. The weight of the pint of finished fluid extract will vary somewhat with the temperature, etc., but should be about 8600 grains; and each minim represents one grain of the Cinchona, and from one-third to a quarter of a grain of the aromatics in half a minim of Glycerin, the remainder being Alcohol and water.

This fluid extract resembles the last in color, but is rather thicker, and has the fine rich odor of the aromatics, and a less pure bitter taste, not so disagreeable to most persons. To many, however, both are agreeable, and almost equally so, particularly when taken in wine. The solubility, reactions, dose and mode of administration are the same as in the simple fluid extract.

This is a very elegant preparation, and has been effectively used for some months, increasing in favor with those physicians who judiciously apply it. It is really but an improved formula and about three times the strength in the other ingredients, and its therapeutic applications are, of course, the same as those of the officinal tincture.

The formula for which the last one is now proposed as an improved substitute has been longer in use, and has proved, in the hands of others to whom it has been given, an excellent and convenient preparation. It only differs from the last in being more accurately a concentrated form of the compound tincture. It is called

Compound Fluid Extract of Red Cinchona,

and prepared as follows:—

Take of Red Cinchona, in fine powder, sixteen troyounces.

Glycerin, eight fluidounces, or nine troyounces and two hundred and eighty grains.

Compound Fluid Extract of Bitter Orange Peel, a pint.

Alcohol, six pints and ten fluidounces.

The management is precisely the same as for *Extractum Cinchonæ Fluidum*, (see page 515,) until one pint of the simple extract is obtained. This is then mixed with the pint of Compound Fluid Extract of Bitter Orange Peel, (which see farther on,) making two pints of the finished preparation. Except that the Red Saunders is omitted as being worse than useless, and the Glycerin added to make a more perfect solution, and prevent the precipitation of the Cincho-tannates, this is the exact counterpart of the officinal Compound Tincture of Cinchona, or Huxham's Tincture, only that, from its being five times the strength, and less liable to precipitate, it is considered a much better and more economical preparation, while it is appropriate to the same uses. Each minim, of course, represents half a grain of Cinchona and half a grain of Aromatics, and the dose is from twenty minims to two teaspoonfuls, according to the indications to be fulfilled by its use. Like the other preparations, it should be given in a little wine or whisky, just before meals.

Compound Fluid Extract of Bitter Orange Peel.

Take of Bitter Orange Peel, eighteen troyounces.

Serpentaria, four and a half troyounces.

Saffron, one and a half troyounces.

Alcohol,

Diluted Alcohol,

Water, of each a sufficient quantity.

Triturate the Orange Peel, Serpentaria and Saffron together, until they are reduced to a fine powder, and divide this into three equal parts. Moisten the first part with four fluidounces of Alcohol, pack it firmly in a glass funnel prepared for percolation, and pour upon it, as required, first, twenty fluidounces of Alcohol, then twelve fluidounces of Diluted Alcohol and, finally, eight fluidounces of Water, in succession, waiting until each liquid has disappeared off the surface before supplying the next. From this, twenty-eight to thirty fluidounces of percolate will be received, and this percolate should be separated, as it passes, into three portions; the first portion of four fluidounces, the second portion of twelve fluidounces, and the third portion, the remainder. Then moisten the second part of the powder with the first portion of the percolate, pack it firmly in a glass funnel prepared for percolation, and pour upon it, as required, the two remaining portions of percolate in the order in which they were received. Follow these with twelve fluidounces of Diluted Alcohol, and then with water, as before. From this about two pints of percolate will be received, and should be separated into three portions, as before. Moisten the third part of the powder with the first portion of the last percolate, pack it firmly in a glass funnel prepared for percolation, and pour upon it, as required, the two remaining portions of the last percolate in the order in which they were received. Follow these with twelve fluidounces of Diluted Alcohol, and then with water, as before. From this twenty-four fluidounces of percolate should be reserved. The first sixteen fluidounces is the finished Fluid Extract, and the remainder is to be preserved in a bottle for use in the next process for this preparation, when, by the use of this instead of so much Alcohol, the pint of Fluid Extract, and a

similar quantity of weaker percolate may be obtained in the same manner from two parts of the powder.

This Fluid Extract is a dense mobile liquid of a brownish, almost black color in mass, but deep brownish yellow in thin strata by transmitted light. It has an intense but not disagreeable aromatic bitter taste, and the agreeable aroma of the ingredients with the Saffron predominant. It is almost wholly soluble in water, but does not give a transparent solution. An accurately-measured pint weighs, at 76° F., 6,700 grains, the same measure of the Alcohol from which it was made weighing at the same temperature 6,050 grains. Each minim represents three-fourths of a grain of Bitter Orange Peel, three sixteenths of a grain of *Serpentaria*, and one-sixteenth of a grain of Saffron or thereabouts.

As the acceptability of medicines to the stomach sometimes depends very much on the aromatics with which they are associated, and as the aromatics themselves are thoroughly medicinal, it is important that they should be of good quality. Bitter Orange Peel is rarely of fine quality, and is generally very poor, from being mouldy, and containing a disproportionate amount of spongy white pulp. The true officinal variety is thin, from small fruit, and very bitter and aromatic. Of late years it appears to be quite impossible to get true Saffron unadulterated; yet an article can always be had at from \$18 to \$20 per pound, which is mainly true Saffron, and commonly well prepared and kept. Such only should be used in this preparation, and of such the cost is so great as to render it questionable whether the *Pharmacopœia* should not abandon it in favor of better aromatics, and those which are indigenous if possible. The solid ingredients of this preparation are better and easier powdered together.

The peculiar mode of managing this percolation, in principle of application, dates back to the earliest experiments made on this subject, but appears to have fallen into disuse from the complexity of detail, and for want of proper discrimination in the substances to which it was applied. The experience of many years, with much attention to the subject, have led the writer to the conclusion that no general plan or general rules for percola-

tion can be safely adopted, but that each substance should be specially studied in order to attain the best practical results. This powder, like a few others, is very easily moistened, so that, with a spatula or horn scoop, and without rubbing between the hands, it is quickly got into a uniform condition, free from lumps, being in this respect very unlike the Cinchonas. It is also easily and quickly packed, with equable firmness, and therefore may be successfully percolated in small portions. The menstruum adopted being an excellent and an easy solvent of all that is desired, and dissolving such portions in almost unlimited amount, while refusing the inert mucilaginous parts, is admirably adapted to be re-applied to successive portions of the powder. Under these conditions, it is not difficult to so arrange the details that practical exhaustion may be effected without a very profuse use of the expensive menstruum; and this is the object of the complicated management. The effect of this management is pretty well illustrated by the weight of the percolates. A pint of the menstruum used weighed 6,050 grains. The first pints of percolate from the three parts of the powder weighed about 6,350 grains, 6,500 grains, and 6,700 grains, respectively; and this weight would doubtless go on increasing within all reasonable limits. When the parts of powder operated on are doubled, of course the advantages of this mode of percolation are increased. The use of Diluted Alcohol to push the Alcohol through is rendered necessary by the circumstance that, if water be at once used, as with the Cinchonas, the powder swells up, gelatinizes and stops the percolation before it has proceeded far, and the object of economizing the Alcohol is frustrated. By the plan described, the Diluted Alcohol displaces the stronger Alcohol at half the cost. The powder holds about eleven and a half fluidounces of Alcohol, but, when the Diluted Alcohol is put on, it swells, and holds much more, so that it requires not only the twelve fluidounces of Diluted Alcohol, but several fluidounces of water in addition, to entirely displace the eleven or twelve fluidounces of weak percolate. The progress of these displacing liquids is well seen through the funnel as they descend and push the Alcohol before them.

If it be admitted that Bitter Orange Peel and Saffron are

but feeble tonics, their properties as stomachic aromatics simply, would hardly warrant their selection as best adapted to these preparations of Cinchona, and the writer has long thought it would be judicious to abandon them in favor of more effective stimulant aromatics, and in the early part of the late war, when called upon to devise a good vegetable tonic for general army use, did not hesitate to abandon these, notwithstanding the many years of accumulated experience with the well-known Huxham's Tincture. The *Serpentaria* being regarded as scarcely more than an aromatic in the small quantity used, Calamus, Cardamon and Ginger were substituted for the three with supposed advantage, and Calisaya or Yellow Cinchona was substituted for Red Cinchona, as being a more uniform Bark, the good varieties of which were more easily accessible, and as containing a larger proportion of the most important alkaloid, and therefore better adapted as a tonic to the miasmatic localities in which it would be often used. The name adopted for it at the time it was devised and first used in the Army was *Extractum Cinchonæ Fluidum*. But when the Committee of Final Revision of the Pharmacopœia declined to adopt it, and adopted the present officinal fluid extract by this name, which was far more appropriate to the simple officinal preparation than to this compound preparation, it became necessary to change the name in order to avoid confusing interference with the Pharmacopœia. It was then changed to *Extractum Calisayæ Fluidum*, by which title it is now somewhat largely and perhaps favorably known. During the war more than 10,000 pounds of it were dispensed from the Army Purveying Depots. The recent Revising Board still retained it upon the Army Supply Table, and its reputation in civil practice seems still pretty well sustained in use, and there can be little doubt that when made from good materials it is an efficient and valuable preparation. Since the first publication of the formula it has been twice slightly modified,—once when presented to the Committee of Revision, and once since. Both changes are believed to have been adopted by the Army Laboratories, and the formula now to be given has been in use since September, 1865.

Extractum Calisayæ Fluidum—Compound Fluid Extract of Calisaya containing Aromatics.

The design is to have a fluid extract of which each minim shall represent half a grain of the Cinchona, and in which the aromatics should have the fixed proportion of 10 per cent. of the weight of the Cinchona, and the sugar 60 per cent. Upon this basis the formula was constructed.

Take of Yellow Cinchona, in fine powder, sixteen troyounces.
Calamus, in fine powder,
Cardamon, in fine powder,
Ginger, in fine powder, of each two hundred and fifty-six grains.
Sugar, nine troyounces and two hundred and eighty-eight grains.
Alcohol,
Diluted Alcohol,
Water, of each a sufficient quantity.

Moisten the Cinchona with twelve fluidounces of Diluted Alcohol: pack it firmly in a glass funnel prepared for percolation, and pour upon it, as required, three and a half pints of Diluted Alcohol, following this with water after the last of the Diluted Alcohol has disappeared from the surface, until the percolate becomes cloudy and makes a precipitate in the receiving flask. The percolate should measure about four pints. Reserve the first pint received, and, having recovered the Alcohol from the remainder by distillation, boil the residue down to six fluidounces. To this add the sugar, and, having stirred the mixture until the sugar is entirely dissolved, add the reserved percolate, stir well, and strain while hot.

Mix the aromatics, moisten the powder with half a fluidounce of Alcohol, pack it in a small funnel prepared for percolation, and percolate it with Alcohol until the percolate obtained when added to the fluid extract be sufficient to make the measure up to two pints.

This finished fluid extract is of a very dark reddish brown, nearly black, color and more or less turbid from some undiscovered differences in different lots of Cinchona of the same richness

in alkaloids. Occasionally a package of Cinchona is met with which yields a permanently transparent preparation. But in general a small deposit occurs as soon as the liquid becomes cold, and this increases in quantity slowly as long as the preparation is kept, requiring that it should be shaken up when dispensed or used. This preparation is not too thick for convenient use, and is very bitter and aromatic, but generally acceptable to the stomach.

The objections to this preparation are exactly the same in kind as to the official Fluid Extract, though by no means the same in degree. It is however susceptible of the same improvement with the same prominent advantages to be gained, and therefore the following formula is offered as a substitute :

Extractum Cinchonæ Flavæ Fluidum—Fluid Extract of Calisaya, with Aromatics.

Take of Yellow Cinchona, in fine powder, sixteen troyounces.

Glycerin, eight fluidounces, or nine troyounces and two hundred and eighty grains.

Aromatic Fluid Extract, (see further on,) a sufficient quantity.

Alcohol, six pints and ten fluidounces.

Water, a sufficient quantity.

The process and management are precisely the same as in the *Extractum Cinchonæ Fluidum Compositum*, see page 517, and the preparation is the same except in the kind of aromatics used, and the Cinchona restricted to the Calisaya or Yellow variety. The name here proposed is objectionable because it is inconveniently long, and yet does not express the compound character of the preparation. The title *Extractum Calisaya Fluidum* would be better, but it is not consistent with the Pharmacopœia nomenclature, and, therefore, should it be accepted for the Pharmacopœia the name would have to be changed.

The dose, mode of administration, etc., are the same as in the simple fluid extract.

The aromatics used here are those which in long service have proved so acceptable in the official *Pulvis Aromaticus*, and it is highly probable that a better combination of better aromatics

could not be found. Hence this powder has been adopted as a corrigent and adjuvant in the compound Extract of Cinchona, and a fluid extract of it to serve the same purposes in the compound Fluid Extracts. Calamus, as an aromatic, is a great favorite with those who have used it most and most appropriately, and this might possibly be substituted for the Cardamon, which is a very dear drug, and often difficult to obtain of good quality, whilst the Calamus is indigenous, cheap and abundant.

There are three practical difficulties which often, if not generally, interfere with the character and quality of the official Aromatic Powder. One is that Cassia instead of true Cinnamon is commonly used. This, however, is authorized by the Pharmacopœia; and this authority is sustained and justified by some, if not all, of the best living authorities who have written on the subject. Yet, where a delicate, sensitive stomach is to be treated, the writer would as little advise the use of factitious brandy or wine. If we are to discard such differences as exist between Cinnamon and Cassia, we might as well replace the Cardamon and Nutmeg by indigenous aromatics. Another difficulty is that the Cardamon is directed to be "deprived of the capsules." This can only be done properly and thoroughly by hand-picking, and this process is so tedious that nearly two hours is required to separate 1000 grains of the short Malabar variety and still longer with the tough long Cardamon. Good short Malabar Cardamon, worth now about \$4.00 per pound, contains an average of about 128 capsules of seed to the 1000 grains, and these in a graduate measure, measure not over 6 f $\frac{3}{4}$. The capsules are thin and compact in structure (not tough and spongy) and peel off with ease from the dark oily rich looking mass of seed, which adhere together often with some tenacity. Such Cardamon contains but few small shrivelled capsules, and but few that have worm holes, and the capsules, though not all short and plump, are tolerably uniform in shape, size and color, and the color should be bright tawny yellow, the lighter the better. Such Cardamon separated by hand give 76.5 per cent of seed. When beaten lightly in a mortar and the hulled seed separated from time to time by a sieve, the greatest practical yield was about 74 per cent., unless the pounding was hard enough to

powder the more friable portions of the capsules. The capsules, when separated from the seed by hand, are very nearly odorless and tasteless; and when separated in a mortar by gentle treatment they are but little more aromatic; but such treatment only yields about 65 per cent. of seed. When beaten hard enough to obtain 73 or 74 per cent. of seed, the capsules are thoroughly aromatic to the taste and smell from the oil which they absorb in the pounding.

The longer Cardamon, with long thick projecting extremities, vary very much in this their peculiar characteristic. When only moderately long, and when full, plump and uniform, they count about 422 to the 1000 grains, and measure $6\frac{1}{2}$ f3 full. They yield to hand-picking 73.5 per cent. of seed, and the capsules are tougher, thicker, more spongy and more difficult to break, and the group of seed within is of a lighter average color, and less inclined to adhere together. When separated by very gentle beating they give 60 per cent. of seed, and by hard beating, but without much powder of capsules, about 71 per cent. The seed of this variety is distinctly less pungent and less aromatic, and less oily than the short, and although they cost about 60 cents per pound less for corresponding high grades of quality, they are really dearer in a true economical point of view. Taken altogether, these experiments indicate that it might be better not to direct the Cardamon "deprived of the capsules," but simply to direct "Cardamon in fine powder," and increase the quantity by 25 per cent. to obtain the aromatic value. The capsules, by their absorbent properties, render it easy to reduce the whole to fine powder, on any scale, without that injurious process of drying, while the seed alone, from their oily nature, are difficult to reduce to the desirable degree of fineness. There are perhaps few pharmacists who powder their own Cardamon as they should do, and that bought of the druggists is, without a single exception in the writer's experience as a drug-grinder, powdered capsules and seed together. This is not intended as an argument in favor of the Pharmacopœia bending to the customs of trade, but to show the pharmacist that, in order to get a good thoroughly officinal aromatic powder, he must powder the Cardamon for himself. This powdering for one's self is still

more imperative in regard to the nutmeg, and the directing nutmeg to be taken "in fine powder" is a not unimportant mistake of the Pharmacopœia, since the writer's knowledge, based on abundant experience, is positive as to the fact that no nutmeg, of however low ordinary grade of quality, can ever be reduced to fine powder, alone, without being "well dried," and it is equally certain that this drying process in oily and aromatic drugs is rather a process of oxidation than of separating moisture, and this oxidation is essentially destructive in all such cases. The pharmacist, equally with the drug-grinder, who tries to reduce nutmeg to "fine powder," or to any degree of fineness useful as a powder, will fail, in consequence of the oily nature of the substance; and any drying whatever of the coarse powder preparatory to reducing it to a finer powder, is not only very wasteful of the essential oil by evaporation, but is wasteful also by oxidizing it into insoluble resin, which powders easily enough. As a deduction, therefore, no pharmacist should ever buy powdered nutmeg, nor need he attempt to powder it for himself. In a formula like the one under consideration, however, the difficulty is easily overcome by crushing the nutmeg, and then adding to it a portion of the cinnamon and ginger powders, which by their absorbent nature take and hold the excess of oil which obstructs the powdering. The Cardamon seed also powders more easily when mixed with these absorbent powders, and the resulting preparation is a more intimate and perhaps more uniform mixture of the aromatic properties of the drugs, than where the powders are simply rubbed together "until thoroughly mixed." For these reasons, the following modification of the official formula is recommended:—

Pulvis Aromaticus—Aromatic Powder.

Take of True Cinnamon, in fine powder,
Ginger, in fine powder, each two troyounces.
Cardamon, six hundred and eighty grains.
Nutmeg, a troyounce.

Rub the Cardamon and Nutmeg into a coarse powder, mix this with the Cinnamon and Ginger, and then triturate the mixture in convenient portions, and pass it through a sieve of sixty

meshes to the linear inch, rejecting a small ligneous residue which is difficult to reduce to powder.

This makes a very elegant and very efficient powder, though not quite so nice as when all the aromatics of carefully-selected quality are powdered together in quantity in an ordinary Chaser mill.

The above formula of 3,080 grains in all, yields to ordinary management 2,840 grains, and 15 to 20 grains of ligneous residue, and the cost of the materials for this $6\frac{1}{2}$ av. ounces of finished powder is about 74 cents, or \$1.82 per pound, a voir-dupois, exclusive of time, labor, skill, apparatus, etc., and profit. If the time, labor, etc., be estimated at 12 cents per pound, making \$1.94, and the profit on this, say 20 per cent., the lowest probable price for good Aromatic Powder could not be less than \$2.33 per pound in first hands, yet it is not uncommonly sold at about \$2.00 per pound.

The medicinal value and uses of good Aromatic Powder are such as perhaps to warrant the introduction into the Pharmacopœia of a fluid extract prepared from it. A fluid extract of aromatics, proposed by Prof. Procter, of Philadelphia, in 1859, has been in advantageous use, but the aromatics are different, are in different proportions, and perhaps not so well adapted to general uses as those of the Pharmacopœia. For the Cinchona preparations, and for many other uses, the following formula is suggested:—

Extractum Aromaticus Fluidum—Aromatic Fluid Extract.

Take of Aromatic Powder, twenty-four troyounces.

Alcohol,

Water, each a sufficient quantity.

Divide the Aromatic Powder into three equal parts, moisten the first part with four fluidounces of Alcohol, pack it firmly in a funnel prepared for percolation, and pour on top, first, a pint of Alcohol, and, after this has disappeared, twelve fluidounces of water. Percolate to sixteen fluidounces, keeping each four fluidounces separate as it passes through. Then moisten the second part of the powder with the first four fluidounces of percolate from the first part, pack it firmly in a funnel pre-

pared for percolation, and pour on top, in succession—waiting until each portion of liquid disappears from the surface, before adding the next—first, the three remaining portions of percolate from the first part of the powder, then four fluidounces of Alcohol and, finally, twelve fluidounces of water. Percolate to sixteen fluidounces, or until the percolate begins to be watery, keeping each four fluidounces separate as it passes through.

Manage the third and last parts of the powder in precisely the same way as directed for the second part, using the percolate from the second to percolate the third with. Percolate to twenty-four fluidounces, reserving the first pint as finished fluid extract, and preserving the remainder for future use. When the process is to be again undertaken, sixteen troyounces of the powder is to be taken, divided into two equal parts, and the weak percolate from the last process used as so much Alcohol to start the first part. From the sixteen troyounces a pint of finished fluid extract and eight fluidounces of weak percolate is to be obtained in the same manner as from the last two parts of the first process.

This makes a very elegant preparation, fully representing the Aromatics, minim for grain, with the use of the smallest portion of menstruum, and without heat. The pint of fluid extract weighs 6,373 to 6,400 grains at 78° F., the same measure of the Alcohol used weighing 6,050 grains.

This method of repercolation, described in connection with Cinchona, is admirably adapted to this powder also, and, if applied with moderate skill, leaves little to be desired.

Brooklyn, August 10th, 1867.

PHARMACOPŒIA HELVETICA. SCAPHUSIÆ EX OFFICINA BRODTMANNIANA, CHR. FR. STÖTZNER, 1865.

(Continued from page 316.)

Vinegars and tinctures are made by maceration or digestion, usually for one week, when the liquid is poured off, the mass expressed, and sufficient of the menstruum added to make the whole, after filtration, of the same weight as the menstruum originally employed. The object, to have these preparations

contain a uniform percentage of the drugs employed, is thereby carried out merely approximately; for the liquid retained by the residue, by the press-cloth and the filter, is charged with the soluble principles, and its quantity must necessarily vary with the nature of the drug. Most of the pharmacopœias of the different German States employ maceration, and after decantation direct the residue to be expressed, and the liquid to be filtered, and forbid to make up the lost quantity by the addition of more menstruum. The preparations made in this manner must necessarily be of more uniform strength, provided the drugs were alike in quality; made according to the Swiss pharmacopœia, it is only by the utmost care and judicious manipulation that they can be obtained of absolute uniformity. It is curious that in Europe the process of displacement is so rarely employed, while in this country it has been carried to great perfection. The objections usually urged against displacement by our transatlantic brethren are all removed if the main points upon which the success of the process depends are carefully attended to, namely, uniformity and fineness of powder, and judicious packing, so as to insure even and slow percolation.

The vinegars of colchicum, digitalis and squill are made to represent one-tenth their weight of the drugs, dilute acetic acid being the menstruum. *Acetum rubi idæi* is made from the syrup with twice its weight of dilute acetic acid.

The formula for *acetum aromaticum*, or four thieves' vinegar, is as follows: lavender flowers, wormwood, peppermint, rue, sage, angelica root, ealamus, and zedoary, of each 8 parts, cloves 4 parts, and sufficient vinegar to make 750 parts.

Medicated waters are made by distillation in the proportion of 1 to 20 (*aqua anisi*, *cinnamomi*, *fœniculi*, *petroselinii*), 1 to 10 (*aqua chamomillæ*, *cinnamomi spirituosæ*, *melissæ*, *menthæ crispæ*, *menthæ piperitæ*, *salviæ*, *valerianæ*), and 1 to 5 (*aqua rosarum*, *sambuci*, *tiliæ*). *Aqua amygdalarum* and *aqua laurocerasi* contain one grain hydrocyanic acid in two ounces; both are made by distilling from the material its own weight of water, agitating with the volatile oil, and diluting the water so that 192 parts will yield one part dry cyanide of silver. These directions are more explicit than those of the Prussian and other pharma-

copœias, which distil a certain quantity of water, and require this to be of a certain strength. The necessity for keeping those two waters is not very obvious; other pharmacopœias very properly allow the dispensation of one for the other, since the prescribed strength of hydrocyanic acid in both is alike; this identity is recognized in the Swiss pharmacopœia, by directing either of the waters to be diluted with 23 parts distilled water, to obtain aqua cerasorum.

Under the name of aqua aurantii the commercial triple orange flower water is used, and a rectification directed in case this should be contaminated with metal. The formula of our pharmacopœia, requiring distillation from the (dried) flowers, we do not believe is ever followed, on account of greater cheapness and superior quality of the proper commercial article.

Our pharmacopœia has a better camphor water than the aqua camphorata of the Swiss, which is made by triturating two grs. of camphor and of gum arabic with one ounce of water.

Aqua chlori is obtained by passing chlorine through a series of (Woulfe's) bottles, partly filled with distilled water, the unabsorbed gas being conducted into a solution of protochloride of iron. The water must contain not less than 3 grains chlorine in the ounce.

Aqua rubi idæi is made from the residue left on expressing the juice, by macerating it in water with a little carbonate of potassa and distilling two parts.

In making aqua calcariæ, the burned lime is first washed by decantation with 50 parts water, to remove alkalies and alkaline salts—a commendable precaution.

For preparing gun cotton the process is similar to our officinal one, except that one-half of the sulphuric acid used is Nordhausen acid, and the cotton is macerated three to five minutes. One part of it dissolved in 18 p. ether furnishes collodium. Collodium cantharidatum is nearly one-half stronger than the corresponding preparation in this country.

Colocynthis præparata (with five-sixths colocynth) and cuprum aluminatum (s. lapis divinus) are made by the well-known formulas; also Zittmann's decoction, in which cinnabar and calomel

have been retained, which were left out in the Prussian pharmacopœia since 1862.

Elæosacchara are made from 2 drops of the volatile oil to 60 grains sugar; elæosaccharum vanillæ in the proportion of 1:15.

Electuarium lenitivum consists of 9 powd. Alexandria senna, 1 powd. coriander, 48 simple syrup and 16 pulp of tamarinds, well mixed.

Elixir pectorale is the old elixir e succo liquiritiæ, composed of 1 licorice, 3 fennel water and 1 liq. ammonii anisatus.

Emplastrum cantharidum contains less than half the cantharides of our blistering cerate, and is, we think, deficient in strength and unreliable. The process, however, is a good one: 1 part finely powdered cantharides is digested in a steam-bath for several hours in 1 p. oil of benne, and then 1 turpentine and 4 yellow wax added.

Emplast. cantharidum perpetuum and unguentum cantharidum are of about the same strength; the former consists of 6 turpentine, 6 mastic, 1 euphorbium, 2 cantharides; the latter of 1 powd. cantharides and 4 oil of benne, digested for 12 hours, strained and mixed with 2 yellow wax.

Emplastrum plumbi simplex is boiled, in the usual way, from 10 litharge, 9 lard, 9 oil of benne and 2 water. Benne oil is likewise substituted for olive oil in some ointments, and in plasters like emplastrum cerussæ and empl. fuscum.

The medicated plasters of our pharmacopœia are, as a general rule, stronger and prepared by a simpler process than those of the Swiss pharmacopœia; the narcotic plasters of the latter (empl. conii and hyoseyami) contain one-third of the powdered herb; empl. opii one-fifteenth powdered opium, while ours contain about the same proportion of the respective extracts.

The following is the composition of some of the compound plasters:—

Emplastrum frigidum s. meliloti comp.—Wax 2, suet 3, lead plaster 3, Burgundy pitch 4, and one part of the following mixture of powders: melilot, galbanum, olibanum, fennel, fenugreek, curcuma, in equal proportions.

Emplast. galbani crocatum.—Wax 8, lead plaster 24, powd. galbanum 24, turpentine 4, powd. saffron 3.

Emplast. hydrargyri.—Mercury 3, turpentine 1, lead plaster 8, wax 2.

Emplast. oxycroceum.—Wax 32, resin 32, powdered saffron 1, annatto 1, galbanum 4, ammoniacum 2, myrrh 2, turpentine 8.

Emplast. resinosum.—Wax 2, suet 2, Burgundy pitch 3, turpentine 4, resin 8.

Emplast. saponatum.—Lead plaster 24, white lead 16, soap 8, camphor 1, dissolved in 1 benne oil.

Emulsio amygdalarum is rather nicer than our *Mistura amygdalæ*; it is made of almonds 1, sugar 1, water sufficient to obtain 12.

Emulsio oleosa consists of oil of almonds 4, mucilage 6, water 32.

There are 57 extracts officinal in the Swiss pharmacopœia, of which number 2 are oleoresins, (cubebæ and male fern), 16 are made with hot or boiling water, 7 with cold water, 23 with alcohol, and 2 only are inspissated juices. Hot water is used chiefly for bitter herbs, like wormwood, blessed thistle, centaury, &c. Quassia and rhatany yield a better extract, though not quite as much, if treated with cold water as directed by our pharmacopœia. It is strange that so many European pharmacopœias direct *Extractum taraxaci* to be made from the recently collected root and leaves, either by boiling or digesting it with water, while in this case it is more necessary than in many others to avoid the long continued application of heat.

The extracts of aloes, myrrh, cinchona (*frigide paratum*), gentian, liquorice, opium and rhubarb are made with cold water; the two first and two last are very properly evaporated to dryness.

The pharmacopœia prepares the narcotic extracts by exhausting the recently powdered leaves with alcohol of .890; after the alcohol has been distilled off, the residue in the retort is allowed to rest in a cool place, the clear liquid is decanted and filtered from the separated chlorophyl and evaporated. These extracts are necessarily stronger than the alcoholic extracts of our pharmacopœia which contain all the chlorophyl taken up by the alcohol. *Extractum aconiti*, *belladonnæ*, *conii*, *digitalis*, *hyoscyami*, *lacturæ virosæ* and *stramonii* are made in this way, the

first five being also kept in a dry state by adding to two parts of the extract one of milk sugar and one of liquorice root, exsiccating at a temperature of 40 to 50° C., and adding enough sugar of milk to make the whole weight four parts, when it is reduced to powder.

Extractum chelidonii and *juglandis nucum* are the only two extracts made from the juice.

Among the alcoholic extracts we notice yet *extr. arnicæ*, made from a mixture of 1 part flowers and 2 parts rhizome; *extr. aurantii*, from the yellow rind; *extr. calami*, *pimpinellæ*, *juglandis foliorum*, *scillæ*, *senegæ*, etc.

Extractum colocynthis compositum is not equal to the American, in which resin of scammony is used and all the aromatic properties of the cardamom preserved, though we believe it may be improved in appearance. The Swiss extract is obtained by exhausting with alcohol of .890, one part powdered cardamom, 3 of soap, 4 of Aleppo scammony, 6 of pulp of colocynth and 12 of extract of aloes.

Extractum Rhei compositum consists of 1 resin of jalap, 1 soap, 2 extract of aloes, triturating with 4 alcohol, adding 6 extract of rhubarb and evaporating to dryness.

Extractum secalis cornuti is identical with ergotin of Bonjean.

Infusum sennæ, the Vienna draught, is the only official infusion.

Of the fourteen liquores, *liquor ammonii acetici* is made with caustic ammonia; *liquor ferri sesquichlorati* is a solution of the crystallized sesquichloride in its own weight of water; *liquor hydrargyri nitrici oxydulati*, a solution of 8 parts of protonitrate in 64 water and 1 dilute nitric acid; *liquor kali acetici* is obtained by neutralizing 5 p. carbonate of potassa with acetic acid and diluting to 21 parts. *Liquor kali arseniosi* contains $\frac{1}{10}$ of its weight of arsenious acid and is consequently one-fourth stronger than our Fowler's solution. *Liquor kali caustici* has a spec. grav. of 1.335—1.340. *Liquor plumbi acetici* is made by digestion and decantation, has a spec. grav. of 1.295—1.300 and contains about one-third more lead than our Goulard's extract. *Liquor stibii chlorati* is obtained from 2 black sulphuret of antimony and 10 hydrochloric acid; the solution is set aside for

several days, decanted, evaporated to three parts and mixed with one muriatic acid and sufficient water to obtain 8 parts.

Mellago graminis and taraxaci are solutions of the extracts in one-third water.

Mucilago salep is made with 5 grains to one ounce of water.

Olea cocta are made by macerating the herbs in one-half alcohol and then heating with 8 parts benne oil until all moisture has been evaporated.

Oleum sulfuratum is the old balsam of sulphur, made from 4 linseed oil with 1 sulphur; and a mixture of this with 3 parts oil of turpentine is official as oleum terebinthinæ sulfuratum.

Opodeldoc and opodeldoc iodatum are made with cocoanut oil soap; the latter contains about $\frac{1}{15}$ of its weight of iodide of potassium and is aromatized with oil of lemon.

Oxymel simplex is merely a mixture of 1 acetic acid with 18 p. honey. Oxymel colchici and scillæ are obtained from 2 p. of the vinegar, 2 sugar and 3 honey.

Pasta gummosa alba (marshmallow paste), pasta gumm. flava (jujube paste) and pasta liquiritiæ are official; also the following Pastilli (troches), namely, pastilli althææ, ipecacuanhæ ($\frac{1}{2}$ grain), kermētis ($\frac{1}{2}$ gr.), liquiritiæ, natri bicarbonici (1 grain), santonini ($\frac{1}{2}$ gr.) and menthæ, made by adding to 4 oz. sugar drops 16 drops oil of peppermint and 20 drops acetic ether.

Thirteen preparations under "pulvis," nine under "species" and sixteen under "spiritus," exclusive of spiritus vini, are official. Hoffmann's anodyne is the same as in continental Europe—3 p. alcohol and 1 p. ether.

The following is the formula for cologne water, spiritus aromaticus: Take one part of a mixture consisting of 6 oil of orange, 1 oil of orange flower, 12 oil of bergamot, 12 oil of lemon, 1 oil of lavender and 1 oil of rosemary; dissolve in 32 alcohol, add 8 water and distil 30 parts.

Spiritus camphoratus: 1 camphor, 9 alcohol, 3 water.

Spiritus saponatus: 4 soap, 9 alcohol, 7 rose water.

Spiritus sinapis: 1 oil of mustard, 60 alcohol.

Spiritus ætheris nitrosi: 12 alcohol, 3 crude nitric acid; distil 10 parts, neutralize the distillate with carbonate of magnesia, and rectify the clear liquid.

The other spirits are distilled from the drugs.

Among the 31 syrups, *syrupus aurantii corticis*, *cinnamomi* and *croci* are made with white wine. *Syrupus chinæ* is a solution of extract of cinchona dissolved in its own weight of Malaga wine and mixed with 50 p. syrup. *Syrupus ætheris* is a mixture of 1 ether and 16 syrup. *Syrupus balsami peruviani* and *tolutani* are made by digesting the balsams in water. *Syrupus capillorum veneris*, *chamomillæ*, *diacodion*, *liquiritiæ*, *mannæ compositus*, *rhei*, *rhæados* and *violarum* are hot infusions, preserved by sugar. *Syrupus gummosus* contains too small a quantity of sugar; the addition of a little orange flower water is an improvement. *Syrupus ipecacuanhæ* contains $\frac{1}{4}$ of ipecac. and is made by mixing a tincture made with alcohol of .890, with syrup. It is rather weak and must separate some resinous matter. *Syrupus ferri jodati* is made by mixing *syrupus ferri jodati concentratus* with 12 parts syrup and contains in each ounce 4 grains of iodide of iron. *Syrupus cerasorum*, *mororum*, *rhamni catharticiæ* and *rubi idæi* are made by fermenting the crushed fruits for several days, expressing and, after obtaining the juice clear, dissolving the sugar. *Syrupus sarsaparillæ* is made by maceration and decoction, and contain Honduras sarsaparilla, China root, guaiacum, sassafrass wood, Huanuco bark and anise.

Nearly all the 58 tinctures are made by maceration for a week with alcohol of .890 spec. gravity and mostly in the proportion of 1 to 6. *Tinctura dulcis* is merely a solution of caramel made by boiling 1 acetate of potassa, 8 sugar and 4 water until a dark brown mass is obtained, which is dissolved in 6 water and mixed with 36 alcohol.

Tinctura jodi is of the strength 1:12, *tinct. jodi concentrata* 1:8 of absolute alcohol (sp. gr. 80—81). *Tinctura opii* and *tinct. opii crocata* (Sydenham's laudanum) contain each one-tenth their own weight of opium. *Tinct. opii benzoica* consists of powd. opium, camphor, benzoic acid and oil of anise, of each 1 part, alcohol of .890 sp. gr. 192 parts.

Among the compound tinctures the following two may serve as specimens, the first being a very popular domestic bitters among our German population, and is said to be also the formula

for an extensively sold nostrum, sailing under the name of a celebrated European physician.

Tinctura aloes composita: Aloes 10 parts, agaric, saffron, myrrh, gentian, rhubarb, zedoary, of each 1 part, alcohol 160, water 40 parts.

Tinctura vulneraria acida: Chamomile, St. John's wort, lavender, wormwood, hyssop, marjoram, melissa, crisped mint, peppermint, rosemary, rue, thyme, saunders, fennel, of each 1 part; alcohol and water, of each 50 parts.

We consider it a step in the right direction that the use of olive oil, so common in European pharmacopœias, has been discarded almost altogether in this one. We have no experience with plasters made from benne oil; but for the 28 ointments, the adoption of lard instead of olive oil is proper. *Unguentum simplex* is 6 lard to 1 white wax, and we consider it preferable to our *ung. adipis*, which is rather stiff during our cold winters.

Unguentum belladonnæ, *digitalis* and *hyoscyami* are made by digesting the powder with three parts of alcohol, mixing the tincture with 4 lard and evaporating the spirit. *Unguentum basilicum* consists of benne oil, wax, suet, resin, black pitch and turpentine.

Unguentum Hydrargyri citrinum is almost identical with our citrine ointment, except that lard is the only fat used. *Unguentum populi* is made by digesting 2 p. poplar buds and 1 *hyoscyamus* in 4 lard; the presence of *hyoscyamus*, we think, ought to be indicated in the name.

Unguentum refrigerans is our *ung. aquæ rosæ*; but the *unguentum rosatum* consists of 4 lard, 1 wax and 1 rose water.

The officinal wines are *vinum aromaticum*, *chinæ*, *colchici*, *stibiatum* and *ferratum*. This last is a very uncertain and necessarily a very unsightly preparation, it being made by macerating 2 parts iron filings and 1 Ceylon cinnamon in 24 parts white wine.

In supplanting the numerous dispensaries, etc., which had been in use in the various Cantons of Switzerland, it was obviously unavoidable to recognize many preparations which are of little or no value, and which will undoubtedly gradually be dropped on future revisions. Looking at the whole work, how-

ever, we must confess that the Swiss pharmacopœia is almost in every respect up to our present knowledge, and while it emanated without any pretensions from a society, it must be classed with the best, and surpassing some at least which are revised and issued by governmental authority. It evidently knows its subject, it aims at simplicity, the language is clear and precise, the processes described with as few words as possible, but never leaving any doubt in the mind of the reader. We believe there are many points from which we can profit in the approaching decennial revision of our pharmacopœia.

JOHN M. MAISCH.

Philadelphia, Oct., 1867.

ON THE SUBLIMATION OF THE ALKALOIDS.

BY WILLIAM A. GUY, M.B., F.R.S., F.R.C.P.,

Professor of Forensic Medicine, King's College, London, etc.

(Continued from p. 436.)

I now proceed to examine those parts of the work of Dr. Helwig which relate to the sublimation of the alkaloids, premising that his inquiry is restricted to the eight poisonous alkaloids,—morphine, strychnine, brucine, veratrine, atropine, aconitine, solanine, and digitaline.* To these bodies he applies the method of sublimation; and obtains, in the case of some of them, satisfactory and characteristic crusts, and in that of others crusts of less defined structure, but yielding equally characteristic reactions. He tells us that he has never used for this purpose a larger quantity of any alkaloid than the $\frac{1}{100}$ of a grain; and he adds that, in nearly all his experiments, he finds that quantity not only too large, but unfavorable to the beauty of the results. He obtains these small quantities by continued dilution and drop measurement. This method of sublimation he believes to be of the greatest value in its application both to metallic and to vegetable poisons, inasmuch, as by it a succession of hitherto quite unknown and highly characteristic data for diagnosis are secured; and he thinks that these assertions are made good in the chapters which treat of the poisons in detail.

* In strict chemical language, the last of the group, digitaline, is a glucoside, and not an alkaloid, a fact recognized by Dr. Helwig.

Let us then turn to these chapters, and see what information they afford as to the points upon which we should naturally wish to be instructed.

1. Under the head of *morphine*, we learn that the one-thousandth of a grain of this alkaloid is sufficient to give a perfectly serviceable sublimate; and that such a sublimate, besides yielding the same reactions as the solutions of its salts, assumes characteristic crystalline forms with distilled water, liq. ammoniæ, and dilute hydrochloric acid, these last of extraordinary beauty.

2. The sublimate obtained from *strychnine* is characterized by the quickness and beauty of its reactions with distilled water, liq. ammoniæ, dilute hydrochloric acid, and dilute chromic acid, of which the last yields results of extraordinary beauty and rare diagnostic value. The smallest quantity which will yield a sublimate is not specified.

3. *Brucine* does not yield such rich sublimates as the two preceding; but they are represented to have the same formation. Nor are their reactions so satisfactory. No distinct crystalline forms are developed by distilled water or liq. ammoniæ, and only evanescent crystals by dilute hydrochloric acid. Dilute chromic acid, or a solution of bichromate of potash, develops characteristic crystals, valuable as being distinct from the reactions of the same acid with morphine and strychnine. The smallest quantity not specified.

4. In *veratrine* we encounter the first alkaloid which yields a crystalline sublimate by Helwig's method. He describes these crystals as rhomboid,—rhomboidal prisms,—and four-sided plates arranged star-shaped; sometimes as *whetstone-shaped*. These crystals are best seen in the thinner sublimates. The reactions with distilled water, liq. ammoniæ, dilute hydrochloric acid, and dilute chromic acid, are not characteristic. The delicacy of the test of sublimation is not indicated. The odor of the sublimate is described as highly disagreeable and penetrating.

5. The sublimate of *atropine* contains neither crystals nor granules; and its reactions are uncertain and unstable. The vapor has a peculiar sweetish odor.

6. *Aconitine* also yields a non-crystalline sublimate, and of

the reactions only that with dilute hydrochloric acid yields crystalline forms.

7. *Solanine* yields eminently satisfactory results. The vapors have a most agreeable odor, and deposit crystals which are in the single form of needles springing from a point, and usually lying across each other as a network. The sublimate is so well defined that it alone suffices for the recognition of the alkaloid. Distilled water, liq. ammoniæ, and dilute chromic acid, yield no characteristic reactions; but dilute hydrochloric acid develops crystals after the lapse of 24 hours or more.

8. *Digitaline*, on the other hand, yields no crystalline sublimate; but the vapor has the characteristic odor of the drug. The reactions with distilled water, liquor ammoniæ, and dilute chromic acid, are of no value; but dilute hydrochloric acid, after 24 hours, and with delicate manipulations, appears to yield characteristic crystalline results. The other mineral acids also give characteristic, though delicate reactions.

It appears, then, that out of eight alkaloids chosen on account of their importance as poisons, two (*veratrine* and *solanine*) yield characteristic crystalline sublimates, by which they are at once distinguished from the remainder of this group, while two others (*morphine* and *strychnine*) in an eminent degree, and one (*brucine*) in an inferior degree, yield sublimates which give characteristic crystalline forms with reagents.

These are the first results of a method of procedure which, as I have already stated, admits of obvious improvement, and yields, when so improved, crystalline sublimates of strychnine and morphine of great beauty, and, as I shall soon have occasion to show, of great interest to the micro-chemist and microscopist.

The short notice of morphine given above is the only one of the eight which makes direct mention of the smallest quantity from which a sublimate may be obtained. A thousandth of a grain is specified, and it may be inferred from the statements made respecting other of the alkaloids (namely, that the quantity used will give a succession of five or six sublimates), coupled with the remark already cited, that the one-hundredth part of a grain is too large to yield clear and good results, that sublimates are obtainable from other alkaloids, as well as from morphine, by

using such quantities as the thousandth of a grain. Now, as it is quite obvious that in order to prove the utility of the method of sublimation we must begin by demonstrating its delicacy, I lost no time in ascertaining this point for myself by operating with the alkaloid strychnine. I had the one-hundredth of a grain of this substance weighed in a delicate balance, and, with common care, obtained fourteen successive sublimates, eleven before the change of color or melting of the alkaloid, and three afterwards. As the fifteenth sublimate was smoky, it was not reckoned, and the process was not carried further. Of these fourteen sublimates, eight showed crystalline forms under the microscope, and the rest were distinct and granular. Of this latter class I selected one, which certainly could not have weighed the fifteen-hundredth of a grain, and, having taken extreme precautions to ensure the absence of any trace of strychnine except in the crust, obtained from it two well-marked sublimates, showing beautiful crystalline forms under the microscope, a third distinctly granular, and reacting most characteristically with one of the liquid reagents, and a fourth and fifth quite distinct, but neither crystalline nor granular. The glass from which the sublimates had been driven off retained a visible stain. If, then, we reject the last two crusts, we still have a sublimate consisting of $\frac{1}{500}$ grain, yielding three characteristic deposits. So that a quantity as small as $\frac{1}{1500}$ grain would yield abundant evidence of the presence of strychnine. I repeated this experiment with another smaller crust of the same series of fourteen, and obtained two well-marked crystalline sublimates. So that I am able to state that a crust not weighing more than the fifteen-hundredth of a grain will yield other crusts, two or three in number, having the unmistakable characters of strychnine sublimates, and one or other of which must weigh as little as from the three-thousandth to the five-thousandth part of a grain.

Out of this conclusive experiment arose a question of great interest: Could such sublimates be obtained from small quantities of strychnine deposited from solutions of the alkaloid—from such solutions as would be formed in the course of medico-legal investigations? The fact stated above, that Dr. Helwig ascertained the quantities of the alkaloid submitted to sublimation by

dilution and drop-measurement, goes far to answer this question; but I sought a more complete answer by dealing with a small and thin deposit from a solution of strychnine in benzole, which deposit did not present any definite crystals when examined by the microscope. Comparing it with the sublimates on which I had just been experimenting, I should estimate its weight as not exceeding the fifteen-hundredth part of a grain. This spot gave four successive sublimates having the crystalline form of strychnine.

In both these cases, whether operating with the sublimate or with the deposit from solution in benzole, the procedure was perfectly simple, and the result apparently certain. The alkaloid does not melt, but sublimes as a deposit of arsenious acid from a solution in water does. The flame of the spirit-lamp was continuously applied to the glass disk, a shallow glass cell with wide opening was superimposed so as to surround the spot, and the sublimate was received on a second glass disk, carefully cleaned and dried by being passed through the flame of the lamp.

There are other preliminary questions not raised in Helwig's work; but which are too important to be overlooked. Is sublimation a property of the alkaloids and the allied active principles as a class? is one of these. I sought for an answer to this question by preliminary experiments with thirty-seven substances, in which were comprised all the active poisons and medicines; and I found that, at the first experiment, no less than fifteen out of the thirty-seven gave distinct crystalline sublimates. So that it may be safely asserted that upwards of one-third of these substances respond to the test of sublimation. The remainder, after melting, like the rest, (cantharidine excepted, which sublimes without melting) gave off vapor which was deposited on the glass disk as watery patterns, generally mixed with crystalloids. Now, as even those alkaloids which ordinarily yield crystalline sublimates do exceptionally furnish these watery patterns, it is not improbable that the list of substances giving sublimates of more defined form would be extended by repeating the experiments with them, and learning by practice the temperature which suits them best. Indeed, I have already

found that by multiplying experiments with the members of the opium group, I have transferred three of them (papaverine, narceine, and paramorphine) from my list of alkaloids not yielding crystalline sublimates to that of alkaloids which afford such sublimates, at least occasionally. If to the alkaloids which give characteristic sublimates we were to add those which, though not characteristic in form, give peculiar reactions, we should probably find that more than half of all these substances are recognizable through the form of their sublimates, or through their reactions with liquid tests. Sublimation, then, may be safely added to the list of those properties of the alkaloids which go to make up a complete description.

But it may be asked:—Is this property of sublimation by heat and deposit on cooler surfaces the exclusive possession of a small group of metallic poisons (such as arsenious acid, calomel, and corrosive sublimate) and the alkaloids and analagous active principles? We already know that an animal product, cantharidine, sublimes unchanged, and deposits itself in very distinct crystalline forms; and that camphor sublimes at common temperatures, and settles on glass bottles and shades in beautiful octahedral crystals; and I may add, as a sufficient present answer to the question, that I obtain crystalline or other well-marked deposits from urea, uric acid, hippuric acid, alloxan, and uramile; and from benzoic, tannic, iodic, and tartaric acids, these being substances which I happen to have at hand.

It may, therefore, be safely affirmed that sublimation and deposit on cooler surfaces (often in forms eminently characteristic, and with changes of form and color not less striking) are properties not only of arsenious acid, corrosive sublimate, and a small group of inorganic substances to which it was first applied, and for which I devised the simple procedure already described, but also of a vast number of organic products, among which the alkaloids and active principles constitute only one class.

There is still one more preliminary question, to which Dr. Helwig does not refer, but which is both interesting and important; namely, do the salts of the alkalies yield sublimates as well as the alkaloids themselves? An answer to this question, sufficient for my present purpose, is furnished by the statement

that the acetate, nitrate, hydrochlorate, sulphate, and phosphate of strychnine afford sublimate, and that one such sublimate from the acetate is not distinguishable from a well-marked crystalline deposit obtained from the alkaloid itself. I also procured sublimate from acetate of morphia, from sulphate of atropine, and from the sulphates of quinine and quinidine.

It appears, then, that these important preliminary results have been already arrived at:—

1. That the test of sublimation is easy of application, and successful with very minute quantities of the alkaloids.

2. That sublimate may be obtained not only from the alkaloids themselves, but also from deposits furnished by their liquid solutions.

3. That the salts of the alkaloids yield sublimate.

4. That the properties of sublimation by heat and deposit on cooler surfaces are common to a large number of substances both inorganic and organic.

5. That as probably one-half of the alkaloids and allied active principles yield characteristic sublimate, sublimation ought to be admitted among the recognized properties of these bodies as a class.

These propositions, however, are but the preliminaries of an inquiry which demands the utmost patience, care, and circumspection, and which, if I do not greatly mistake the indications I have already obtained, will add largely to our knowledge by many new facts, as well as by some corrections of statements too hastily put forward.

In my next communication I shall endeavor to point out the precautions which we must observe if we would turn this newly-discovered property of the alkaloids to practical account. These precautions must be recognised and acted upon before we proceed to the examination of individual members of the class.—*London Pharm. Journ.*, July, 1867.

ON BURGUNDY PITCH.

By DANIEL HANBURY.

The authors of the British Pharmacopœia have defined Burgundy Pitch (*Pix Burgundica*) as a resinous exudation from the

stem of the *Spruce Fir*, *Abies excelsa*, D. C. (*Pinus Abies*, L., *P. excelsa*, Lam.), melted and strained. They have thus followed the London College of Physicians, which for nearly a century and a half has included this substance in its *Materia Medica*, indicating in the latter editions of its pharmacopœia a similar botanical origin.

On the Continent the term *Pix Burgundica* (which is not frequently applied) appears to have a less definite signification than with us, being used synonymously with *Resina alba*, to designate the resins of various coniferous trees after purification, by being boiled in water and strained. The following description is translated from one of the more recent and esteemed works on pharmacology, that of the late Dr. Berg:—*

“White Resin, White Pitch, Yellow Resin, Yellow Pitch (*Weisses Harz, weisses Pech, gelbes Harz, gelbes Pech*), *Resina s. Pix flava s. citrina*.

“It is obtained by melting common resin, with the frequent additions of water, and subsequently straining. According as the melting has lasted a longer or shorter time, the resin remains paler in color, and constitutes *White Resin*, or becomes darker, and is called *Yellow Resin*, and is thereby richer or poorer in oil of turpentine. The first, owing to the water which it contains, is almost entirely opaque, white, brittle, and becomes gradually yellow. The second, through the formation of a little colophonic acid, by reason of the longer melting, is of a yellow, dark yellow, or brownish, color, very brittle, here and there clear, and has a conchoidal, glassy fracture. An inferior kind, called *White Pitch*, is obtained from the resin that is first produced in the manufacture of tar, and has a brownish yellow color. The true *Burgundy Resin* or *Pitch*, (*Resina s. Pix Burgundica*) is the similarly prepared resin of *Picea excelsa* and *Pinus Pinaster*, which is brought into commerce in the form of dull, dirty-yellow, brittle masses, of a glassy fracture, softening in the hand. Ordinary Burgundy Pitch is White Resin, which has been gently melted for a short time without the addition of water, so that it is in fact freed from a part of its water, but has not yet acquired the brown color of colophony.”

* *Pharmazeutische Waarenkunde*, Berlin, 1863, p. 566.

In France, as in England, the term *Burgundy Pitch* (*Poix de Bourgoyne*) is by the more accurate writers restricted to the melted and strained resin of the spruce fir, of which substance the following description is given in the last edition of the *Codex* :—

Translation.—Burgundy Pitch is of brownish yellow, solid and brittle in the cold, flowing when warm, very tenacious, having a peculiar odor, and an aromatic taste without bitterness; not completely soluble in alcohol in the cold. There is frequently substituted for it another product called white pitch (*poix blanche*), prepared with *galipot*,* or a mixture of yellow resin and Bordeaux turpentine, melted and mixed with water. This artificial pitch has a strong smell of Bordeaux turpentine, and a very marked bitter taste. It is entirely soluble in alcohol.

Where is then true Burgundy pitch manufactured? Is it actually met with in commerce? By what characters may we judge of its purity?

The authors of the British Pharmacopœia mention it as a production of Switzerland, where the spruce fir is certainly found in great abundance. But I have it upon excellent authority—that of my friend, Dr. Flückiger, of Bern—that at the present time no terebinthinous resins are collected in Switzerland for commercial purposes. Neither is true Burgundy Pitch produced in France, as its name would seem to indicate, *Pinus maritima*, Lamb. being, in fact, the only tree the resin of which is collected in that country as an industrial product. The name *Burgundy Pitch* seems, in fact, to be a complete misnomer, no such substance having been ever produced in Burgundy. Pommet, writing in 1694, thus speaks of "*Poix grasse ou Poix blanche ou Poix de Bourgoyne*" :—

"On fait fondre le Galipot avec tant soit peu d'huile de Terebenthine, et de la Terebenthine commune, et ensuite c'est ce que nous appellons *Poix grasse*, ou *Poix blanche de Bourgoyne*, à cause que lon prétend que la meilleure et la première s'est faite à saint Nicolas en Lorraine: ce qui est tout le contraire d'au-

* *Note by Translator*.—*Galipot*, dry resin, collected in France from the trunks of *Pinus maritima*, Lamb.

jourd'hui: car la meilleure poix grasse vient de Holland et de Strasbourg, d'où nous la faisons venir."

Knowing these facts, and having failed to gather any precise information from pharmacological writers as to the districts where the resin of the spruce fir is an object of industry, it was with some interest that I examined the various collections of forest products in the French Exhibition. Nor was I disappointed, for, among the contributions from Finland, I discovered a suite of specimens illustrating this very subject. Baron Linder, of Svarta, near Helsingfors, is the exhibitor of the resin of the spruce fir in two forms, namely:—

1. The crude resin as exuded from the trunk of the tree, and described in the following words:—" *Barras* ou gomme concrète, adhérente aux sapins (*Pinus Abies*). Produit brut servant à la fabrication de résine, etc., etc. Prix 12 francs les 100 kilogr."

2. The resin purified by melting in contact with the vapor of water and straining. It is thus described on the label attached to the specimen:—" *Resine jaune* cuite (à vapeur d'eau à chaleur modérée) de *barras* de sapin (*Pinus abies*). Prix 40 francs les 100 kilogr.: production annuelle 35,000 kilogr."

Of these two resins, the first is not found in English commerce; the second constitutes genuine Burgundy pitch, precisely such as may be bought in the London market. The quantity of this purified resin produced annually, it will be observed, is very considerable, being equivalent to 77,000 lbs., or more than 34 tons weight. Baron Linder is likewise an exhibitor of the crude resin of *Pinus sylvestris*, of the same in a purified state, of oil of turpentine, Iceland moss, and a few other productions of Finland.

The Paris Exhibition shows that true Burgundy pitch is also produced in Germany. Mr. J. G. Müller, of Löcherberg, near Oberkirch, in the Grand Duchy of Baden, has taken the trouble to exhibit an instructive and complete series of large specimens in illustration of the products of the spruce fir, comprising:—

1. Portion of a stem of *Abies excelsa*, about four feet long, treated for the production of resin. This stem has had cut in it, longitudinally, at equal distances, four even and regular channels, an inch and a half wide, and of the same depth; from the

sides of these channels the resin exudes, and is scraped off with an iron instrument made for the purpose.

2. The crude resin, (*Roh-Harz*), as scraped from the stem, contained in the original triangular bark-basket used in the country.

3. *Wasser-Harz*. This has been obtained by boiling in water and pressing the crude resin. It is grey and opaque; contains much water, and is identical with an impure but genuine Burgundy pitch sometimes found in the London market.

4. *Gereinigtes Fichtenharz, Resine purifiée*. This is No. 3 in a purified condition, or, as we should call it, *True Burgundy Pitch* in its purest condition.

In addition to these specimens, Mr. Müller also exhibits samples of resin prepared for the use of brewers, who in Germany employ resin (*Brauerpech*) for coating the inside of beer casks.

Another exhibitor of genuine Burgundy pitch is Mr. Theodor Müllner, of Hinter Brühl, Post Mödling, near Vienna, who shows *Fichtenharz*, or crude resin of the spruce fir, and *Fichtenpech*, which is the same in a purified condition. The latter may be regarded as a type of good Burgundy pitch.

These contributions to the Paris Exhibition show that the resin of the spruce is collected for trade purposes in Finland and in Germany, and in the first-named country upon a very considerable scale. It does not, however, appear that it is ever termed *Burgundy Pitch* in the places where it is produced.

Although genuine Burgundy pitch (usually, it must be admitted, in a very impure state) has been always obtainable in the London market, it is rarely found genuine in the shops, an artificial compound being very generally supplied in place of it.

This artificial Burgundy pitch is of most variable appearance. In examining eight samples of it, I find that in my notes I have described it as dull tawny, bright tawny yellow, bright yellow, brilliant orange yellow, or bright orange brown. Some samples have a dull, wax-like fracture, others a more or less shining or conchoidal fracture. Some exhibit when broken numerous cells, containing air or water, others are more compact. All are more or less opaque, but become transparent on the surface in the course of time by the loss of water. All the samples have

a weak, terebinthinous odor, not one possessing the fragrance of true Burgundy pitch. All are free from bits of stick and such like impurities, which are frequently found in the genuine drug.

I am not in the secret of the manufacture of this artificial Burgundy pitch, for which, indeed, each maker must have his own formula. According to common report, however, it is formed by melting together common resin with palm oil, or some other fat, water being stirred into the mixture to produce an opaque appearance. In examining the characters of genuine and spurious Burgundy pitch, I have noted the following differences:—

True Burgundy Pitch.

Artificial Burgundy Pitch.

Color, dull yellowish brown; fracture, shining, conchoidal, translucent; some samples contain much water, and are opaque, and of a dull grey color, and require straining to free them from impurities. Odor peculiarly aromatic.	Color usually more brilliant than that of the true Burgundy pitch. Odor weak and hardly aromatic.
Not wholly soluble in alcohol of .838, but leaves a small amount of fine white flocculent matter.	Still less completely soluble in alcohol of .838.
Placed in contact with double its weight of glacial acetic acid in a vial, is dissolved with the exception of a small amount of flocculent matter.	Similarly treated forms a turbid mixture, which soon separates into two layers,—a thick oily liquid above, and a bright solution below.

The foregoing characters apply to most of the artificial Burgundy pitch which I have examined, and may be useful, so far as they go, for distinguishing the genuine from the spurious. The odor of true Burgundy pitch is in itself an excellent criterion which cannot be conveyed by description. Solubility in glacial acetic acid serves to reveal the presence of fatty matter, which is a common, perhaps an essential ingredient in the artificial Burgundy pitch made in this country.

From what has preceded may be deduced the following

CONCLUSIONS.

1. True Burgundy pitch is the melted and strained resin of *Abies excelsa*, D. C.
2. An artificial compound is usually sold in lieu of it, both in this country and on the Continent.
3. True Burgundy pitch is produced on a large scale in Finland, also of very fine quality in Baden and in Austria.
4. True Burgundy pitch differs palpably from the artificial, and may be easily distinguished from it.—*London Chemist and Druggist*, Sept. 14, 1867.

ENGLISH MEDICINAL RHUBARB AND HENBANE.

BY RUFUS USHER, Esq.

Although the introduction of medicinal rhubarb into England is dated by Parkinson as far back as 1629, no real experiments of its culture and preparation for medical use appear to have been made till 1762, when a quantity of seed was sent from Russia, by Dr. Mounsey, from which period till about 1800 it was successfully grown in small quantities by many scientific men, after which it was cultivated at Banbury on an increasing scale, and is now known in the commercial world as a general article of trade; and not only is it consumed in considerable quantities in this country, but it is exported largely to various parts of the civilized world. The origin of the plantations of rhubarb in my possession, and now extending over forty acres, will be best traced by the following extracts from the "Transactions of the Society of Arts." In 1789:—"The Society, in consideration of his merit, and to promote as much as in them lies the growth and cultivation of so valuable a drug, voted their silver medal to Mr. Hayward, as a bounty." In 1794:—"The following accounts and certificates respecting the growth and cure of rhubarb having been received, the gold medal, being the premium offered for cultivating the greatest number of plants, was adjudged to Mr. William Hayward, of Banbury." The following is the testimony of Dr. Pereira:—"In 1789 Dr. Hayward obtained a silver medal, and in 1794 a gold medal, from the Society of Arts, for the cultivation of English rhubarb. Dr. Hay-

ward died in 1811, and the plants were purchased by Mr. P. Usher."

As a proof that even at this early period of its cultivation English rhubarb had obtained the confidence of scientific men, it may be stated that, in 1798, rhubarb of British growth was used at St. Bartholomew's, St. Thomas's, and Guy's Hospitals, and was being experimented on at several others. According to the testimony of Sir Alexander Dick and Dr. Hope, of Edinburgh, in 1784, but little rhubarb was used by the apothecaries of that city but what was produced in Scotland, and it was considered in no respect inferior to Russian. About the same time English rhubarb was put to a severe test at Bath, by Drs. Falconer, Parry, and Fothergill, all of whom attested its merits. Dr. Falconer remarked that two of the specimens submitted to them answered in external marks to the character of the foreign; that they were rather inferior in delicacy of taste to the Turkey, but superior in other respects to East India. In 1810, Dr. Thornton, then lecturer on botany at Guy's Hospital, referring to the encouragement given to the cultivators by the Society of Arts, makes these remarks:—"This account may serve to show both the ardor of the respectable Society in encouraging the growth of this useful article and the persevering industry of some gentlemen in overcoming all the difficulties attendant on introducing a new plant into cultivation—finding out the means of curing it as an article for extensive sale, and overcoming the prejudices of such as cannot persuade themselves that a drug of British growth can bear competition with what is sent us from foreign countries."

If at a later date the prejudice against English rhubarb having increased, there must have been other causes than those existing in the first introduction of the plant. One cause of the subsequent change in public opinion may have arisen from the partial introduction of new varieties of the plant. From the earliest period in its history there appears to have been a confusedness in the evidence as to its real character; and whether foreign rhubarb is produced from the *Rheum palmatum* or the *Rheum undulatum*, yet remains an unsettled question. As far as this question relates to rhubarb grown in Great Britain, the stronger

probability is, that, after it was imported, several varieties were produced by repeatedly propagating from seed, when a discrepancy was observed, at variance with the earliest descriptions recorded. To show the extent of those changes, I may remark that in the last instance in which I noticed the effect of seedling cultivation, about thirty years since, I found the stalks and leaves more than double the size of those produced from offsets—a circumstance sufficient to account for the introduction of such varieties as the Victoria and other large sorts now so common in our gardens, and which, when propagated from seed, still keep working change upon change. So convinced have I been for a long time of the injurious tendency of this system, that I have studiously avoided the use of seed altogether; and the plant has so far receded to its original type, that not one has produced ripened seed during the last twenty years. It is a fixed trait in the cultivation of medicinal rhubarb, as it is in most bulbous plants, that if produced from offsets only, it ceases to produce seed, and if raised from seed, each succeeding generation produces seed also, adding variety to variety almost indefinitely. Assuming, as an incontrovertible fact, that the plant has now for such a lengthened period been propagated from offsets as to be incapable of bearing seed, it will guarantee the conclusion that if, during a number of years, when its cultivation was pursued by a large number of growers, for the purpose of making experiments, and each one, in haste to enlarge its growth, resorted to seed propagation, it degenerated from external causes, it is equally logical to infer that, the causes having ceased which led to its deterioration, it has now regained its specific distinctiveness, and is not likely to diverge again into any transition from its central type. It is thus quite possible to account for the previous deterioration of the plant for medical uses, which caused the strong prejudice existing for many years against it, and some remaining doubts are still expressed respecting the real properties of English rhubarb; but that a powerful reaction has taken place in its favor since the plant has been restored to its primitive form of development, there is most ample testimony, not only in the increased demand for it at home and abroad, but in the evidence of eminent medical practitioners. In addition to

the improvement which became apparent in the plant by the entire exclusion of seedlings, an important change has been effected in the mode of drying, by exchanging a high artificial temperature for a more gradual one; the process in the first stages being effected by the application of a strong current of atmospheric air, which has not only greatly condensed the root, and rendered it less porous, but has given it an appearance approximating more closely to foreign.

The progressive but certain destruction of all former prejudices existing against the use of English rhubarb may be adduced from facts much stronger than theory. The first is that as recently as 1845, the extent of land appropriated to the cultivation of the plant did not reach ten acres, whereas now it has reached upwards of forty acres, and even this is quite insufficient to supply the foreign demand for trimmed English rhubarb. If the home consumption of this drug had remained stationary, the export trade alone would have afforded every facility for extending the plantation—a fact most strikingly shown by the article being sent to ports, such as Odessa, from which East India rhubarb is sent to Great Britain.

Even where regulations of the most stringent character have been put in force to prevent the use of either inferior or adulterated drugs, English rhubarb has passed the ordeal in safety. The following is a portion of one of the statutes of the United States of America, entitled, "An Act to prevent the Importation of Adulterated and Spurious Drugs and Medicines." Thirtieth Congress, Chapter 70th, date 1848; Section 1st provides:—"That from and after the passage of this Act, all drugs, medicines, medicinal preparations, etc., imported into the United States from abroad, shall, before passing the Customs-house, be examined, as well in reference to their purity and fitness for medical purposes, as to their value and identity specified in the invoice." Section 3d provides:—"That if, on examination, any drugs, medicines, medicinal preparations, whether chemical or otherwise, are found, in the opinion of the examiner, to be so far adulterated or in any manner deteriorated as to render them inferior in strength and purity to the standard established by the United States, Edinburgh, London, French, and German phar-

macopœias and dispensaries, and thereby improper, unsafe, or dangerous to be used for medicinal purposes, a return to that effect shall be made upon the invoice, and the articles so noted shall not pass the Customs-house unless, on a strictly analytical character called for by the owner or consignee, the return of the examiner shall be found erroneous." To carry into effect the provisions of this Act, qualified examiners of drugs were appointed, at salaries varying from one thousand to sixteen hundred dollars per annum, at the ports of New York, Boston, Philadelphia, Baltimore, Charleston, and New Orleans.

A large portion of my trimmed rhubarb for several years passed through the hands of Messrs. David Taylor & Sons, for shipment to the American market, where it became a regular article of commerce.

From the year 1855 to the present period the demand for English rhubarb has far exceeded my means of supplying it; and the ratio in which the increasing demand is taking place far exceeds the propagating capacity of the plant. The period when the rapidly increasing demand for export took place was that immediately succeeding the investigation of the question by a Committee of the House of Commons, during the sessions of 1855 and 1856. It will be recollected that a committee was appointed, of which Mr. W. Scholefield, member for Birmingham, was chairman, to invest the question of adulteration of food, drink, and drugs. During the sitting of this committee a large number of witnesses were examined on the question of English rhubarb, with varying results as to the individual opinion of the parties examined. Some, amongst whom may be named Dr. Hassall, contended it was practicable to carry out a system of absolute purity in drugs and chemicals; whilst others, with equally practical views, contended that a classification as to the quality of those articles must always exist. I need scarcely say that the evidence adduced on the question of the adulteration of drugs, as of other things, was very conflicting and inconclusive. At the commencement of the second session occupied by the committee in this investigation I was summoned, on the 5th of March, 1856, to give evidence on the long-vexed question of English rhubarb; but both as regards my own and the evidence

of other parties, which fully shows the importance of the question raised, I can do no more in this paper than refer the reader to the Blue-book for an exposition of the whole affair. But to show that my position was not damaged by the result, I quote the following words of the chairman of the committee at the close of my examination:—"If it be represented to the committee that English rhubarb is sold as an adulterating article, and is of a very inferior quality to foreign, that is a mistake; for medical men attribute very important medicinal qualities to English rhubarb, and it is consumed in some important public establishments, and is held by very high medical testimony to be an exceedingly useful medicine." One of the public establishments referred to here is the London Hospital, where English rhubarb alone had then been used for a number of years. The inquiry carried on before the committee was kept alive, to a great extent, owing to what was represented to be the extreme difference in the money value between foreign and English rhubarb; and it was on this point that I had to complain of some unfairness. One witness stated the difference as great as between 11s. per pound on the one side and 4d. on the other. Here the retail price of foreign was quoted, the average wholesale price of China rhubarb for the two months previous being only 5s. 6d., whilst as to quality, the maximum of one was set up against the minimum of the other, as I was, at the very time the evidence was taken, entering English rhubarb for shipment at 2s. per pound to Messrs. Taylor, Brothers, Mark Lane.

A great error, almost invariably committed in passing judgment on any article of supposed inferiority, is to judge it by an improper standard. This has been strictly so in the present instance. To show that one sample is of bad quality is certainly not proving that another is good; but when an attempt has been made to prejudice the public against the use of English rhubarb, it has sometimes been done by putting it into competition with the very choicest specimens of the foreign article; and I believe that all the comparisons, including the testimonials also, have been made on this principle. If it is true that a great difference exists in samples of drugs generally, it is yet more so in those of foreign rhubarb. It is well known that but a very small propor-

tion of imported rhubarb is of the best quality. This fact did not escape the notice of Dr. Pereira. He remarked that when China or East India rhubarb arrives in London, it is hand-picked, tared, and sorted into three qualities—bright and sound, dark and horny, and worm-eaten. He adds the following evidence on this point:—"In 1840, when China rhubarb was very scarce, a quantity of foreign rhubarb, imported from Calcutta, was sold, some at 4*d.* and some at 1*d.* per pound." As the evidence arising from dissimilarity of price has been used as an argument to show the inferiority of English to foreign, the following facts deserve notice:—In the years 1846 and 1847, there was a very large quantity of foreign rhubarb disposed of, amounting to several tons weight, and such was its general quality and condition, that the terms made use of to designate it, with the prices realized, were as follows:—Old and bastard, at $\frac{1}{2}$ *d.* to $1\frac{1}{2}$ *d.* per pound; old brown and rotten, 1*d.* to 4*d.*; rotten and damaged, 3*d.* to 5*d.*; brown, old, and perished, 1*d.* to 6*d.* During these periods large quantities of English rhubarb were sold at from 1*s.* to 2*s.* per pound. Thus it is seen, that if the maximum price of foreign is higher than English, the minimum price of English is higher than foreign. Whatever, therefore, may be supposed to be the relative difference between English rhubarb and the best specimens of foreign, it is clear that, owing to the very imperfect method of curing it in those countries where it is produced, there is invariably that strict uniformity of character in the one which is as invariably wanting in the other.

One leading question relating to this most important medicinal production yet remains to be solved at some future period, namely, whether the plant from which foreign rhubarb is produced is the best that could be selected? Judging from the very great variety and very interesting specimens in the possession of Dr. Hooker, all of them distinctly differing from each other, it would appear doubtful if the foreign cultivators have made such researches and instituted such experiments as would lead to a judicious selection of the best sorts. It is also highly probable that, if offsets could be obtained from a number of the several varieties of the plant produced in Tartary and elsewhere, we might acclimatize some yielding higher medicinal properties

than any yet cultivated in Great Britain; but as the means of obtaining them is entirely out of my power, I can only say, that if I could be assisted in procuring them, I should feel great pleasure in carrying out such a series of experiments as might ultimately render an important addition to the medicinal productions of the nation.

My attention has recently been called to the subject of the preparation of that very important medicine, tincture of henbane, in consequence of the very erroneous views entertained with regard to the quality of the plant, and to the somewhat scanty, if not imperfect directions, contained in the new Pharmacopœia respecting its preparation for use. It is out of my province altogether, as a grower and preparer only of medicinal plants, to call in question the correctness of the Pharmacopœia from any other point of view than that of an omission. The directions given in this work for the preparation of tincture of henbane are, to use "the leaves and branches of the indigenous biennial plant dried, when about two-thirds of the flowers are expanded." Now I believe that almost every wholesale druggist in the kingdom will endorse my statement, when I say that up to the year 1862 but a fractional part of the tincture of henbane prepared in this country was made from the blossoming biennial plant; a circumstance not so much reflecting discredit on those who prepare and supply the article for use, as arising from the absolute impossibility of procuring the material to carry out the instructions of the Pharmacopœia. If the question is asked, why the blossoming biennial plant had not, up to that period, been produced in sufficient quantity to supply the demand, I reply that, owing to the almost invariable attack made on the plant during the autumn and winter months by the wireworm, slug, and other destructive visitants, but a small proportion survives till the ensuing spring. Either the root is bitten through in several places or the bud entirely consumed. To this it must be added, that of the plants which escape this ordeal, when they have reached the stage of their development pointed out in the Pharmacopœia, namely, "when two-thirds of the flowers are expanded," the quantity of foliage is very scanty, and it will only pay the producer at a high price.

Through some erroneous impression, that has long existed, and still continues to exist, respecting this very important plant, the first year's growth is spoken of as the annual, than which nothing can be more palpably wrong, as the two articles, when prepared for use, vary as essentially in their external appearance as in their constituent properties; applying this simple test only, that the annual plant, when dried, consists both of leaves and blossom, whereas the first year's growth of the biennial must necessarily consist of leaves only. Assuming that, when the second year's growth of the biennial plant cannot be procured, recourse must be had to the first year's growth as a substitute, the Pharmacopœia should have made known the comparative strength of the latter. No objection could have been made to such directions, when it could be shown that a second-class article must of necessity supplant a superior one, as occurs, doubtless, not only in this but in many other medicinal preparations. If, in the use of the two separate articles now under consideration, the same instructions are carried out, namely, to use two ounces and a half of the dried plant for a pint of tincture, and one should prove to possess two or three times the strength of the other, it assumes a serious aspect in the administration of so very important a medicine. We require a new definition altogether of the plant when dried for use. Instead of making two divisions only, as at present, annual and biennial, it should be classified as follows:—

Biennial henbane of 2d year's growth. British annual henbane.

Biennial henbane of 1st year's growth. German henbane.

This would at once simplify the question, and prevent those erroneous views which have very widely prevailed amongst all parties concerned in its preparation and use. It will be seen that I have arranged the above classes in the order of their value. The two last mentioned—the British annual and the German—although most extensively used, are so thoroughly undeserving notice, that they require mention only to guard the public against their use altogether. Of these two, the British annual is perhaps preferable to the foreign, and its appearance, unfortunately, approximates sufficiently close to the second year's growth of the biennial plant to enable the vendor to pass it as

such; but if no other criterion existed than that it possesses no flavor or aroma, that would be sufficient to detect the imposture. Independently of this test, the leaves will be found much shorter; and occasionally will be seen a pure primrose blossom, which never occurs in the beautifully streaked blossom of the biennial; but the very fact of the appearance of blossom in the sample, that blossom being generally so much like the blossom of the biennial, leads to the very erroneous conclusion that it is the same plant.

Owing to the extreme price which the dried biennial plant of the second year's growth has realized in former years, the consumers have not given that encouragement to its production which its intrinsic value merits. The great difficulty, however, which has thus been felt till very recently—that of not being able to obtain a supply except at a most exorbitant price—is now to a great extent obviated. From a long, careful, and continuous study of the cultivation of biennial henbane, I have at length so far succeeded in preserving it from the attacks of insects, to which it is ordinarily subject, and have to such an extent economized the system of drying the plant, as now to bring the price within reasonable bounds, and to leave those who prepare the tincture of this valuable plant without any just excuse for using an inferior article.

This is not an age in which scientific research can be long baffled in its inquiries; and as the articles in question will be placed before the public in the Paris Exhibition of 1867 (class 44), no more will be anticipated from their inspection by a competent tribunal than the closest scrutiny will justify.—*London Pharm. Jour.*, Aug., 1867, from the *Jour. of the Soc. of Arts.*

NOTES ON TINCT. OPII AND LIQUOR OPII SEDATIVUS. BY MR. ALFRED SOUTHALL (Birmingham).

In continuation of a subject which was brought forward at the last meeting of the Conference, viz., the analysis of various specimens of ordinary commercial opium; in order further to show the extremely uncertain medicinal value of different samples, I have since examined a variety of specimens of tincture of opium, some of which have been kindly forwarded to me by Dr. Attfield. These specimens were, I believe, procured indiscriminately from

the establishments of various pharmacutists, and show a variation in strength which may well rather alarm the prescriber for the welfare of his patient.

Taking the standard of strength required by the British Pharmacopœia, which states that 100 grains of opium should yield at least 6 to 8 per cent. of morphia, the consequent strength of tincture of opium B. P. should be not less than 0·5 per cent. of morphia. The following is my result of nine samples of tincture :

No. 1 specimen contained 0·8 per cent. of morphia.

" 2	"	"	0·5	"	"
" 3	"	"	0·6	"	"
" 4	"	"	0·5	"	"
" 5	"	"	0·2	"	"
" 6	"	"	0·5	"	"
" 7	"	"	0·4	"	"
" 8	"	"	0·7	"	"
" 9	"	"	0·5	"	"

Good commercial opium, such as is commonly found in the English market (as our analysis last year showed), contains frequently as much as 10 to 13 per cent. of morphia; and the Pharmacopœia laying no restriction upon a maximum yield of morphia, opens a wide door for a great diversity in the strength of its opium preparations, so that a tincture yielding from $\frac{1}{2}$ to 1 per cent. of morphia is within the Pharmacopœia limits.

The letter which was lately addressed to the *Pharmaceutical Journal* by Mr. J. T. Miller, of Sheffield, on the value of the British Pharmacopœia tests for opium, is well worth perusal.

Although Liq. Opii Sedativus is not officinal, yet this form of administering opium is scarcely less important than the tincture. It is, however, interesting to notice in the analysis of the eight following samples that the same wide diversity exists :

No. 1 specimen contains ·6 per cent. morphia.

" 2	"	"	1·2	"	"
" 3	"	"	·7	"	"
" 4	"	"	1·0	"	"
" 5	"	"	·5	"	"
" 6	"	"	·8	"	"
" 7	"	"	1·5	"	"
" 8	"	"	1·1	"	"

—*London Chemist and Druggist*, Sept. 14, 1867.

Minutes of the Philadelphia College of Pharmacy.

The semi-annual meeting of the Philadelphia College of Pharmacy was held at the College hall on the evening of the 30th of September, fourteen members present. In the absence of the President, the second Vice-President, Dillwyn Parrish, presided.

The minutes of the last meeting were read and approved; the minutes of the Board of Trustees were read by Wm. J. Jenks.

Prof. Procter, one of the delegates of the College to the International Pharmaceutical Congress, which assembled in Paris in August last, read the following report of the proceedings of that body, which was accepted and directed to be published.

To the Philadelphia College of Pharmacy :

The undersigned, one of your delegates to the "International Congress of Associations and Societies of Pharmaceutists," held in Paris on the 21st, 22d, 23d, and 24th of August, 1867, respectfully reports that he attended that Convention, which convened in the hall of the Société de Pharmacie. Delegates from Southern and Northern Germany, Austria, Belgium, Denmark, Egypt, Spain, the United States, France, Holland, Hungary, Italy, Prussia, Russia, Sweden, and Switzerland, were present. France was represented by nearly sixty delegates from the numerous provincial associations and societies.

The meeting was temporarily organized by M. Bussy, of Paris, in the chair, M. Robinet, the Commissioner of the previous Congress, acting as Secretary.

A Committee on Credentials verified the certificates of the delegates, and on considering the manner of voting it was determined that the votes should be by nations and not by societies; giving the countries a number of votes proportioned to the number of Pharmaceutists they represented, which was considered the juster mode, as otherwise France, who had more delegates than all the other countries combined, would have out-voted them. The aggregate votes amounted to forty, of which the United States had four.

The election of Permanent Officers being in order, a ballot was cast, and Dr. Rieckher, of Marbach, in Wurtemberg, was elected by a large majority. Five Vice-Presidents were then elected, in the following order: Messrs. Procter, of the United States; Dittrich, of Austria; Andrès, of Russia; Ferrari, of Spain; and Mosca, of Italy. M. Robinet, of Paris, was elected General Secretary, and Messrs. Tisell, of Sweden; Flückiger, of Switzerland; Schleisner, of Denmark; Walter, of Holland; Mayet and Limouzin, of France, were elected Vice-Secretaries.

The communications received by M. Robinet, directed to the Congress, were then read in abstract.

One of the first subjects considered was the feasibility of a universal

Pharmacopœia, to be used in all civilized countries. Various views were offered, and a large majority were evidently in favor of the adoption of the idea. The influence of climate, and the various needs of countries in consequence, were offered as a reason for not adopting a universal code, but it was not admitted as cogent, as it was believed that the peculiar needs of special cases could be met in an addendum. The Latin was adopted as the only suitable language for such a work; one member advocated having the text in the several principal languages of Europe! When the general features were settled, and the final vote came for or against the adoption of the suggestion of a Universal Pharmacopœia, the votes were all in the affirmative except those from the United States, which were given in the negative because the delegates believed the differences in the Pharmacy of Continental Europe and that of the United States was too marked, as regards the strength of numerous preparations, to permit a fusion of codes, on the basis of either the German or the French, by the Pharmacopœial authorities of the United States.

In regard to weights and measures, the general opinion was in favor of the metrical system. M. Margraff, of Berlin, stated that the Prussian Government had just adopted the metrical weights, and had under consideration the measures. The action of our own Government was stated.

The second and third sessions were chiefly occupied in the discussion of certain questions previously printed and circulated among the members. The first of these was in reference to the practice of Pharmacy, which, for clearness, was presented under three heads, viz., Shall there be unlimited liberty, as in ordinary mercantile business? shall there be free practice, with the guarantee of a diploma and personal responsibility under the common law? or shall there be a wise regulation by law designed to ensure the public interests and to protect the pharmacist?

This question involved that of free competition in business, and called forth much discussion, as there were, especially among the French members, many advocates for a more open competition than obtains in many parts of Europe. All the delegates voted against the first view, all except those from the United States against the second view, and all but those of the United States in favor of the third view, which was carried by a large majority of the votes. Had the delegates acted as individuals the result might have been the same, but the minority would have been much larger, from the French delegates who were not permitted to vote.

The second question, "Is it proper to limit the multiplication of pharmaceutical shops?" was referred to a Committee consisting of Messrs. Ditrach, of Prague; Flückiger, of Berne; Peltz, of Riga; Gastinel, of Egypt; Torok, of Hungary; Kretschner, of Breslau; Walter, of Holland; and Faber, of New York, who reported in favor of limiting the number of pharmacies by law, M. Faber alone voting in the negative.

The third question was, "Is it proper to demand the creation of Institutions of a disciplinary character, destined to maintain the correct stand-

ing of the Profession of Pharmacy, by insuring its correct practice, and to represent and protect it in all its exterior relations?" was referred to a Committee, who reported in the affirmative, which view was adopted by the Congress.

As some of the speakers had alluded to Pharmacy in America in a way to give a wrong impression, a short statement was prepared and read, with the view of setting us aright.

On the morning of the second day it was announced that M. Guibourt, who it was expected would be at the meeting, was dead, causing a profound sensation among the members. M. Guibourt was President of the Société de Pharmacie of Paris, and Chairman of the Committee having the arrangement of the Congress. The deceased had attained his seventy-seventh year, and, though quite infirm, had the enjoyment of his faculties. His funeral took place on the 24th of August, at noon, and was attended by many members of the Congress.

The subject of "Pharmaceutical Specialties," or what we called proprietary articles or preparations, which came up naturally in the discussion of the first and third questions, elicited much expression from both the affirmative and negative sides. M. Bondet and Robinet were particularly eloquent in opposing these preparations, whilst Messrs. Vée, Foumoze and others, representing the French view of greater freedom in competition, were equally vehement in their advocacy; but they were unable to do more than express their sentiments, as the voting was by countries.

The Congress adjourned on the morning of the fourth day, committing the business of arranging a third International Congress to the same Commission, viz., Messrs. Schroeder, of Russia; Robinet, of France; Beckert, of Austria; Rieckher, of Wurtemberg; and Bley, of Prussia; and leaving the time and place to be fixed by the Commission.

On the evening of the 23d of August the members were invited to a dinner given by the Pharmaceutists of Paris, which was numerously attended and passed off in a satisfactory manner.

On the afternoon of the 24th, at 3 o'clock, the members were invited by the authorities of Paris to meet at the Place du Chatelet, and make a subterranean excursion in the great sewers of Paris. About sixty members attended, descended spiral stairs to the main sewer, which was there about 12 to 15 feet in diameter, having a central canal with flat sidewalks, upon the edges of which the cars were placed. Five cars being filled, the company were propelled by the operators a distance of two miles, probably under the rue Rivoli, to the Place de la Concorde, when the company entered boats and were drawn along the large sewer which passes the Madeline, for perhaps half a mile, when the members ascended to the Boulevard, much gratified with the excursion, and without any annoyance from dampness or bad odors. It was observed that the main water pipes for the city supply are conducted along the upper part of the sewers, so as to be at all times capable of inspection. The local telegraph wires are

also carried along these subterranean avenues in tubes attached to the ceiling.

In conclusion, it may be stated that the Laboratory, Museum and Botanical Garden of the Society of Pharmacy were freely open to the members during the sessions, and that an excellent social feeling prevailed.

Very respectfully submitted.

WILLIAM PROCTER, JR.

Philadelphia, Sept. 30th, 1867.

No reports being received from the delegates to the American Pharmaceutical Association, the report was, on motion, deferred until the next annual meeting of the College.

The subject of increased accommodation for the School of Pharmacy of the College being called up for consideration, a series of resolutions was informally offered, and after discussion it was resolved, that the chair appoint a committee to digest and perfect the resolutions, and present them to the College at its next annual meeting, in March next, or to a special meeting called for the purpose.

To this service the Chair appointed

Chas. Bullock,
T. Morris Perot,

Chas. Ellis,
Ambrose Smith,

William J. Jenks.

A communication was read from Samuel F. Troth, Chairman of the Sinking Fund Committee, giving a statistical account of the operation of that committee for the past 23 years. In 1832 the indebtedness of the College was \$11,500. Through the exertions of the Committee and the liberality of the Loanholders, and carefully husbanding the small resources placed at the disposal of the Committee, the debt of the College has been liquidated. The reading of this report elicited remarks of congratulation over the work accomplished, and appreciation of the untiring faithfulness of the Committee, during nearly a quarter of a century, in accomplishing their object.

On motion, the Committee on Sinking Fund was discharged, having performed the purpose of its appointment.

Prof. Procter offered the following resolution, which was adopted.

Resolved, That this College has heard with great satisfaction the final report of the Treasurer of the Sinking Fund Committee, announcing the entire liquidation of the College debt; and, believing that this result has been in a great measure due to the untiring efforts of the Treasurer of the Committee, Samuel F. Troth, hereby extend to him the thanks of the College for his valuable and long continued service; and that the Secretary be directed to furnish him with a copy of these resolutions.

William C. Bakes, on behalf of the members of the College, presented to the College a portrait in oil of Prof. Wm. Procter.

The resignation of Thomas P. James was accepted, and he allowed to retain his certificate of membership.

The semi-annual election being in order, the Teller reported the election as *Trustees of*

Dr. W. H. Pile,	Edwd. Parrish,	A. B. Taylor,
Evan T. Ellis,	Wm. C. Bakes,	Wm. J. Jenks,
H. N. Rittenhouse,		Chas. Shivers.

Committee on Deceased Members.

Edward Parrish,	Wm. Procter, Jr.,	Chas. Bullock.
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On motion, then adjourned.

CHARLES BULLOCK, *Secretary.*

Editorial Department.

EUROPE AND THE PARIS EXHIBITION.—The visitor at the International Exhibition at Paris, who pretends to give a report of what is there to be seen, needs to be well provided with time and writing materials; for so extended is the display and so numerous are the details, that many days are required for even a cursory examination, and much more for a comparison of the specimens, even in the classes that specially interest the pharmacutist, (classes 40, 43 and 44.) The collections of drugs and medical substances in the departments of Brazil, Turkey, Australia, India and Algeria, are quite numerous, and many of them very curious. The French and British governments have taken special pains to gather the productions of their colonies, and the Turkish government, including Egypt, is very well represented in this class. There are also numerous objects of interest to the pharmacist in the collections of nearly every country of Europe and their colonies. Of the more important of these collections we obtained the special reports through the kindness of B. L. Simmonds, Esq., of London, the British Commissioner for those classes, who greatly aided us, by personal attentions, in finding the more important groups. We hope, by the aid of these reports, and some notes taken on the spot, to recur to this subject at an early date. European pharmacy is more particularly illustrated in the 44th class, which embraces "chemical and pharmaceutical products," and one might spend days among the numerous collections of France, Germany and England, so rich are they in rare and beautiful products of the Laboratory.

The interest of the pharmacist, however, is not confined to the classes mentioned; in chemical, pharmaceutical and philosophical apparatus, metallic ware, glass ware, earthen ware, etc., there are many things that deserve examination. But amid so much that is attractive in all departments, owing to novelty or beauty, or excellence, it should

not be expected that the traveller, albeit a pharmacist, (urged on his journey by the ever recurring necessity of seeing much in a short time,) should linger among his specialities, whilst his pathway teems with the best productions of the manufactories, the studios, and the museums of the old world. And so of travel — the disciple of Galen, temporarily emancipated from the pestle, wandering amid the olive shades, the orange groves and vineyards of Southern Europe, is not tempted to view them from the standpoint of the Pharmacopœia, when among them he finds scattered the tombs, the monuments and the lands marks of an ancient civilization, about which his earliest recollections of history lead him to inquire — and whilst liquorice and argols and olive oil and castile soap are legitimate objects of inquiry, it should not be deemed strange if they received much less than their share of the time and scrutiny of the traveller. Nevertheless we have some notes of these things and expect to get them into a shape suitable for publication, offering the above as an apology for not having contributed to the journal during our absence in Europe.

THE PHARMACEUTICAL CONGRESSES AT PARIS.—Two Conventions of Pharmacutists occurred in Paris in the month of August, 1867. The *French National Congress*, representing by 100 delegates 55 Local Pharmaceutical Societies, in a general Congress, the eleventh of its kind; and the *International Congress*, representing the Societies of Europe and the United States. The subjects under discussion at the former were mainly professional, referring to the qualifications of practitioners of Pharmacy, the conditions under which Pharmacies should be opened, the relations of Pharmaciens and Physicians, the annual visitation of shops by a board of inspectors, etc. The Congress embodied its views on these points in a series of 26 articles, which it is proposed to embody in a law through the agency of the Government. Among these articles are the following:—

Art. 1. "No one shall be able to take out a pharmaceutical patent, open a pharmacy, prepare, vend or sell any medicine or remedy, either for human medicine or in the treatment of animals, if he has not been recognized as a pharmacien according to the forms determined by law."

Art. 6. Foreigners will not be permitted to practice pharmacy unless they obtain a license and the French diploma.

Art. 7. A pharmacien cannot hold, directly or indirectly, more than one shop open to the public. He can practice in this shop no other profession but that of Pharmacy.

Art. 10. All association between a physician, surgeon, health officer, or veterinary doctor, having for its object the exercise of Pharmacy, is interdicted; and all collusion or trickery between these classes is equally forbidden.

Art. 11. The simultaneous exercise of Medicine and Pharmacy is interdicted, except in certain specified cases in country practice.

Art. 15 refers to the action of a syndic chamber in visiting shops

annually, assisted by a commissary of police or the mayor of the commune, to insure the good quality of medicines. The members of the syndic chamber to be elected by the pharmaciens of each department of France from among their number.

Certain scientific questions were also discussed, and medals granted for the best papers in reference to the solanæ and the tannins.

The *International Congress* consisted of delegates from seventeen distinct Nationalities, and about a hundred and thirty members. Our readers will find a report on this subject at page 561. The meeting took place in the Hall of the Society of Pharmacy, which was too small to accommodate the Convention comfortably. Some of the most noted pharmacutists of Europe were here drawn together, and not the least important part of its results will grow out of the social intermingling of these well-known members of the profession of Pharmacy.

MEETING OF THE ASSOCIATION.—Our readers will find a report of the meeting of the American Pharmaceutical Association, made up from notes furnished by Prof. Maisch, the permanent Secretary. Owing to not being present at the meeting, the Editor is unable to fill in many references to the discussions, which have usually appeared in the Journal report, and the phonographic report did not come to hand in time to profit by it. The occasion appears to have been one of unusual interest, and the papers read numerous. We hope to be able to present our readers some of these in future issues. The Exhibition which accompanied the meeting was the largest ever offered to the Association, and we have transferred the report on its items, printed in the *Druggists' Circular* of October, to the present number. See page 568. The movement in reference to improving the financial condition of the Association has our hearty approval, especially that relating to the abolition of life membership.

Excursion of the Association.

On Friday afternoon, September 13th, at three o'clock, the members with their wives and daughters to the number of three hundred, met on board the steamer Thomas Collyer, and proceeded down the bay to Sandy Hook, and returning passed around Governor's Island and up the Hudson to Yonkers and back. The weather proved delightful, the music excellent, and a handsome collation served on board, proved to be not only "good of its kind" but of the right kind, giving eminent satisfaction. Just before landing, the floral decorations of the tables were distributed among the ladies. In addition to the other objects of interest, two natural phenomena, a Lunar Eclipse and an Aurora of great beauty, were visible to the excursionists, (as they were to the writer who enjoyed them highly from the deck of the Minnesota as she was steaming across the Atlantic). The boat arrived at the pier at 9 P. M. without accident.

EXHIBITION AT THE NEW YORK MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.—Not having had the pleasure of seeing the Exhibition, nor the report of the Committee relative to it, we avail ourselves of the very full report of the *Druggists' Circular* for October.

American Pharmaceutical Association. Exhibition of Pharmaceutical Objects.

Early in July, the Local Secretary, Mr. P. W. Bedford, issued a circular, copies of which were sent to the address of many members of the Association, as also to those engaged in manufacturing articles used by pharmacutists, desiring contributions of objects of interest for exhibition.* Quite a large number of persons responded, the result of which was an excellent display of useful and interesting material. Among the exhibitors of *chemicals* were J. F. Luhme & Co., L. Martin & Co., C. Pfizer & Co., Rosengarten & Sons, and Carter & Scattergood.

J. F. Luhme & Co., exhibited a fine collection of the rarer chemicals of foreign manufacture.

There might be mentioned, tungstic, stearic, molybdic. and antimonic acids, oxides of cobalt, manganese, uranium, chrome, nickel, and copper, oxalates of ammonia and cerium, succinate of ammonia, and about twenty other specimens of chemicals. A large sheet of aluminium attracted much attention.

L. Martin & Co., exhibited thirty-six specimens of their manufacture of chemicals. Among the more noticeable (although all were especially fine), were ammonio-citrate of bismuth, citrate of iron and quinine, iron by hydrogen, pyrophosphate of iron, the salts of zinc, acetate of potassa, acetic, carbolic, gallic, muriatic, nitric, sulphuric, tannic and valerianic acids, and sulphate of morphia.

This house makes a speciality of furnishing pure chemicals, and it was stated that the specimens on exhibition were taken from ordinary stock, without any special preparation or selection. The oxide of zinc, and iron by hydrogen, are superior to any we have ever before seen of domestic manufacture.

C. Pfizer & Co., exhibited fifty specimens of their manufacture. Special mention is made of the elegant crystals of permanganate of potassa, nitrate of silver, piperin, iodide and bromide of potassium and of cadmium. Of the other articles, iodine, iodides of arsenic, sulphur and ammonia, the scaled salts of iron, valerianate of zinc, chlorate of soda, sub-nitrate and sub-carbonate of bismuth, and caustic potassa, were fine specimens.

Rosengarten & Sons exhibited forty specimens in a case. Sulphates of quinia and morphia, bromide of potassium and nitrate of silver, in one-gallon jars, made a fine display. Of the other chemicals, the more prominent were the fused and crystallized nitrate of ammonia, iodides and bromides of ammonium, sodium, and cadmium, the scaled salts of iron, acetate and muriate of morphia, piperin, tannic acid, chromic acid, iodides of lead and mercury, and sulphate of cinchonia.

Carter and Scattergood, of Philadelphia, were represented by two handsome specimens of red and yellow prussiate of potassa, in solid mass of crystals, each weighing about forty pounds. They were exhibited by P. W. Bedford, to whom they belong.

E. S. Wayne, of Cincinnati, exhibited specimens of crude tartar, cream of tartar, Rochelle salts, and tartaric acid made from wines of the

*During the sessions of the Association.

Ohio grape; a specimen of opium produced in Tennessee, containing over ten per cent. of morphia.

Chemical and pharmaceutical apparatus were exhibited by J. F. Luhme & Co., Mandelbaum & Mandel, J. Arnaboldi, and Dr. W. H. Pile.

Luhme & Co., exhibited burette stands in brass and wood, burettes, graduated pipettes, hydrometers, thermometers, Nicholson's areometer in glass, apparatus for decomposing water and collecting the products, graduated mixing bottles, specific gravity balance, apparatus for fractional distillation, chemical balances, Luhme's gas stove, Bunsen's gas burners and O'Donnell's retort stand.

Mandelbaum & Mandel exhibited a variety of glass-ware for chemical and pharmaceutical use, retort stand, separating bottle, alcoholometer in case, crucibles, evaporating dishes, litre mixing-bottle, and pill machine.

J. Arnaboldi exhibited various patterns of thermometers, hydrometers, hygrometers, and urinometers.

Dr. W. H. Pile, of Philadelphia, exhibited an alcoholometer in case; various patterns of hydrometers, adapted for ammonia, sugar, sea-water, acids, etc.; urinometer in case, graduated pipettes, tubes and measures, stoppered and plain specific gravity bottles.

The Washington Pharmaceutical Association presented several specimens of preparations made by formulæ adopted by the pharmacutists and physicians of the District of Columbia.

J. W. Shedden exhibited prepared flour of bran, adapted for use of dyspeptics, and a pyramid containing a large number of specimens of minerals.

W. N. Walton & Co., New York, exhibited a variety of druggists' glassware of their own make, and ornamented with their patent recess label.

Geo. W. Stoeckel, Pittsburgh, Pa., exhibited graduated bottles, from one to sixteen ounces capacity, made by his patent. The smaller bottles are graduated by drams, and the larger by half-ounces. They are a great convenience to the patient, as well as to the pharmacist.

B. O. & G. C. Wilson, Boston, Mass., exhibited fifteen specimens of pressed herbs, in pound packages, as also a variety of one and two ounce papers. The herbs sold by this house are superior to any we have seen, and deserve high commendation. They are entirely freed from all the large stems, and though pressed firmly, the leaves retain their form very perfectly.

Becker & Sons, of Hudson City, N. J., exhibited four patterns of their excellent balances. The largest balance was designed for analytical purposes, and was one of the most sensitive balances we have seen. It was purchased by Dr. Chandler for the analytical laboratory of the School of Mines. Three of these balances were adapted for prescription use, and were sensitive to the fiftieth of a grain, while the gold scale with ten ounces in each pan would turn as quickly. We would especially call the attention of those requiring very delicate analytical or dispensing balances to those of Becker & Sons' make, believing them to be equal in accuracy to any made in Europe.

Henry Troemner, Philadelphia, made a fine display of balances. Four patterns of "Hoffman's" patent balance were shown, as also some handsome gold and silver plated prescription balances, twine boxes, twine reels, and a very pretty pattern of cork press in brass. The "Hoffman" balance has the working parts within a box below the pans, similar in general appearance to the Beranger balance, but has a single beam, and consequently less bearings. One balance of this kind was finished in elegant style, the frame of the box being solid brass, heavily plated with

gold, while the sides and top were of plate-glass, showing the working parts of the balance, which were of polished brass and steel. The prescription balances were of neat design, plated and very delicate. The two firms just alluded to, furnish the United States Government with nearly all the balances used in the various mints, assay offices, and other departments.

V. W. Brinckerhoff, New York, exhibited five patterns of counter balances of various kinds. All were of the kind with the pans above the working parts, which are encased in marble, bronze, or open work. They were all of good workmanship, and very sensitive. Of prescription balances, four were shown of different grades, all good of their kind.

A case of large amputating instruments, a pocket-case of smaller size, a pocket-case of post-mortem instruments, a set of forceps, and a pair of saddle bags, were also contributed by Mr. Brinckerhoff, who manufactures surgical instruments and surgical appliances of all kinds.

Buckalew & Waterman, Philadelphia, exhibited a balance called the "arc scale," which has a stationary weight working on a pivot, and indicating both troy and avoirdupois weights.

W. H. Schieffelin & Co. exhibited a handsome prescription balance, in case, as also a Beranger balance, small size, for the same purpose. The house also exhibited some specimens of drugs: tonka beans in pod, sumbul root, squill root, kameela, koussou, kino, St. John's bread, xanthorrhoea, quillai bark, ant's eggs, Vienna glycerine, cod-liver oil, oil of peppermint (from Hale & Parshall) coumarin, and sulphate of soda.

Wm. Neergaard exhibited an interesting series of cinchona barks, eighteen specimens in all, each having its origin and constituents noted on the label. They were presented by Professor Winckler.

Howell & Onderdonk exhibited specimens of pharmaceutical preparations, consisting of elixir calisaya, iron and bismuth, elixir valerianate of bismuth, liquor bismuthi, syr. iodide of starch, and various preparations of iron and the hypophosphites.

Codman & Shurtleff, Boston, exhibited a variety of surgical and medical instruments, comprising various styles of apparatus for the atomization of liquids for inhalation, disinfecting sick-rooms, and perfuming. Freezing apparatus, for producing local anæsthesia, with various forms of tubes for physicians' and dentists' use; nasal douche; a new spring vaccinator; champagne syphon, and various instruments for inhalation of ether.

J. M. Migeod & Son, Philadelphia, exhibited a neat style of medicine chest, and a pair of physicians' saddle-bags of their own manufacture.

Wirz, Philadelphia, exhibited a pill machine, having a chilled iron frame around the machine.

E. Parrish, Philadelphia, exhibited pharmaceutical stills in copper and tin, gas furnace, suppository moulds, camphor ice-tray, and tin oil cans with glass labels; also fourteen varieties of effervescent salts of P. Squire's make.

Mellor & Rittenhouse, Philadelphia, exhibited citrate of magnesia, Seidlitz, Kissengen and Vichy salts in granules. Also, some narcotic and other extracts manufactured by William Ransom Kitchin, England.

Charles Ellis & Co., Philadelphia, exhibited some granular salts of the same class as just mentioned.

Bullock & Crenshaw, Philadelphia, exhibited ninety-four varieties of sugar-coated pills and granules. This house ranks deservedly high in furnishing a reliable article, carefully made and handsomely finished. They also exhibited a brass mould which opens on a hinge for suppositories, a very convenient article.

Wm. R. Warner & Co., Philadelphia, exhibited a great variety of sugar-

coated pills, which presented a handsome appearance. Some samples of Gordon's glycerine of fine quality were also exhibited by this firm.

Hance, Griffith & Co., Philadelphia, exhibited a handsome medicine chest, filled with samples of fluid extracts and sugar-coated pills. The chest and contents were donated to the New York College of Pharmacy by the firm.

W. T. Fry & Co., New York, exhibited a new style of breast pump and cupping cups, exceedingly simple in their construction and application, and superior to anything for the purpose now before the public.

B. H. Sleeper & Co., Philadelphia, exhibited a set of graduates, made by Hodgson's patent. They are moulded, and the divisions on the graduate are made accurate by the careful adjustment of a conical plunger. They are infinitely superior in accuracy to the great majority of the graduates sold.

The New England Glass Co. exhibited some handsome quart glass stoppered bottles.

The Pennsylvania Salt Company, Pittsburgh, exhibited specimens of cryolite and its preparations.

R. Dudgeon, New York, exhibited a hydraulic press, occupying not more than four square feet of floor room, and capable of a pressure of *ten tons*.

Mardon Wilson, Jr., Philadelphia, exhibited several sizes of the India-rubber water and ice bags made under Chapman's patent, intended for local application in disease.

O. B. Gray, New York, exhibited a great variety of India rubber goods, such as are usually sold by the pharmacist, including syringes of all styles, flesh rubbers, speculums, pessaries, stethoscopes, water bags, and chair cushions.

G. E. Ranous, New York, exhibited Wheelock's Reserve Flow Syringe, two patterns.

The Mattson Syringe Co., New York, exhibited the new pattern of "Mattson Syringe," which possesses some advantages over the styles prevalent of late. They also make a new instrument called "The Vaginal Irrigator," which can be attached to any elastic tube syringe.

Borden & Currie, Elgin, Ill., and New York, exhibited their extract of beef. This article is the *best* of the kind made, being the true juice of the meat evaporated in vacuo to a solid consistence, and represents *twenty* times its weight of meat. This article is made in Illinois from fatted cattle, and not, as some of the so-called extracts, from scrap-ends of meat unfit for sale.

Zimmerman & Co., New York, exhibited specimens of Catawba brandy and deodorized alcohol.

E. B. Phillips & Co., Newfoundland, a sample of cod-liver oil of fine quality.

W. C. Bakes, Philadelphia, on behalf of the Alumni Association of the Philadelphia College of Pharmacy, exhibited an oil-painted photograph of William Procter, Jr., until recently the Professor of Pharmacy in that College.

P. W. Bedford, New York, exhibited a photograph album containing seventy-five photographs of members of the Association. Also, a frame with fourteen photographs of prominent members of the British Pharmaceutical Conference.

An engraving of the interior of J. Bell's laboratory in London in 1840.

J. D. Williams, New York, exhibited samples of tin boxes, for druggists' purposes.

The Swift Manufacturing Company, New York, exhibited a great variety of light wooden boxes for Druggists' and other business purposes. They are well adapted for keeping herbs, drugs, etc., as also for mail or express packages.

The handsome glass cases used for articles on exhibition, were furnished by F. A. Howell, No. 5 North William st., New York.

John Matthews exhibited a magnificent large size soda-water apparatus, the case of which was constructed of Tennessee marble. The interior is arranged with glass syrup jar-coolers, and pipes for mineral waters, with all the latest improvements. Also one of smaller size of French marble. There was also a castor stand fitted with glass jars for syrups, patent glass fountains, one exhibited in section, and Matthews' patent coupling and stop-cock.

The elegance of these articles was a subject of much comment.

E. Bigelow, Springfield, Mass., exhibited one of his "Polar" soda apparatus. This apparatus is a case of marble, containing the coolers, the syrup jars being of stoneware, and the draft tubes lined with porcelain, the mineral water draft tubes lined with glass, and Wm. Gee's patent soda draft-tube. This apparatus is deservedly popular.

J. W. Tufts, Boston, Mass., exhibits an "Arctic" soda apparatus of his construction. It is well known to the trade.

Wm. Gee, New York, exhibited his patent soda-water generator and fountain. This apparatus, which is described in his advertisement on another page of this journal, is the best machine for the purpose. It is well and securely made, free from action of deleterious metals, occupies but little room, easily managed, and is more economical of gas than any other apparatus. Its peculiarity is that the fountain can at any time be filled by means of the pump without disconnecting any portion of the apparatus, and that all the gas is utilized.

Schultz & Warker, New York, exhibited an apparatus for giving injections of carbonic acid water.

Dr G. Wieber, Williamsburgh, exhibited a variety of mineral waters, in syphon bottles.

High Rock Spring Co., Saratoga, N. Y., exhibited the water of that celebrated spring in bottles and on draught. The analysis of Prof. C. P. Chandler proves the water of this spring to be one of the best of the Saratoga waters.

A. R. Lawrence & Co., Saratoga Springs, exhibited the water of the "Excelsior" Spring in bottles, on draught charged with carbonic acid, as also in its natural condition. The water of this spring is filled in bottles and barrels by hydrostatic pressure, thus retaining all the gas which exists in the water.

The firms of Scribner, Welford & Co., George Routledge & Co., B. Westermann & Co., and E. Fougere, all of New York, exhibited copies of scientific works, interesting to the pharmacist.

Prof. F. J. Bumstead, M. D., exhibited fifty colored plates, illustrating some portions of Medical Botany and Materia Medica. They were greatly admired.

There were many other articles which might have been mentioned, but our space forbids. The exhibitors deserve the thanks of the profession for the articles sent for display, and the Local Secretary is entitled to great credit for his "labor of love" in carrying out the project, which was accomplished so successfully, and with great satisfaction to all present.

Chemistry. By Brande & Taylor. Second American edition, thoroughly revised. Philadelphia: Henry C. Lea. 1867, pp. 764, octavo.

The work of Brande & Taylor has been so favorably received since its introduction to the American public, in 1864, that a new edition was required, and it is well worth mentioning that this second American edition has been very carefully revised, and enlarged by nearly seventy pages, by Dr. Taylor, the surviving author, Prof. Brande having deceased since the first edition was issued. The author appears to have extended his care to all portions of the work, organic and inorganic. Among the former, additions will be found at chloroform, nitro-glycerin, anilin colors, valerianates of soda and of zinc, petroleum, &c. Chemical attraction, saline solubilities, spectrum analysis, and other subjects, have also been enlarged, so that the claims of the book presented to the student are strong and decided, as being up to the present time, and meriting his confidence. The book is well printed, and appears to have been duly cared for in passing the press.

The American Naturalist, a popular, illustrated Magazine of Natural History. Essex Institute, Salem, Mass. Edited by Alphæus S. Packard, Jr., in connection with Edward J. Morse, Alphæus Hyatt and Frederick W. Putnam.

Three numbers of this excellent monthly have reached us—those for April, May and September—and our omission to notice their reception has been accidental rather than intentional. The first number, containing the prospectus, we have not seen; but, by an advertisement appended to the September number, we are informed that the publishers are much encouraged by the patronage already extended to the work. From a glance over the pages we are satisfied that it will prove a valuable means of creating a taste for natural history, by presenting the subject in a form attractive and easily understood. Besides, the illustrations and typography are so excellent that the work is an ornament to the table. Our farmers should encourage it, if for no other reason than to get information of a reliable character about the insects and other pests that are attacking their crops, growing and gathered. It is not often that so much true science is served in a form so agreeable and attractive, and the price is only three dollars a year. The editors have our best wishes for continued and increased success.

The Laboratory, a weekly record of Scientific research, Numbers 18 to 26. London, Aug. 3 to Sept. 28. Published by James Firth, 22 Cannon St., London. Edited by John C. Brough.

This new weekly journal commenced its career with much promise. Its articles have been well written, its contributions excellent, and its getting up admirable, being one of the best printed journals received. In view of all this it is with regret that we learn from the Editor that the publication

is suspended for the present, owing to the meagre patronage extended to it. Mr. B. trusts that it will reappear at a future date, but at present bids his friends adieu.

The Chemical News and Journal of Physical Science, Vol. 1, No. 1. 1867.

Edited by Wm. Crookes, F. R. S. Published by W. A. Townsend and Adams, New York, July, 1867.

The question of the legal right of republication, in the absence of an international copyright law, may seem clear to those who oppose that law, but the circumstances under which the above publication is issued certainly calls for a word at our hands, and all interested in scientific literature. The New York issue professes to be a *reprint*, and yet the arrangement of the matter is altered, the paging is altered, and the numbering is changed. Journals, in quoting from the reprint, forget this, and at once mislead their readers. For instance, in the number of the *Franklin Institute Journal* just received is an article on Cantharidin, credited to *Chem. News*, Vol. 1, No. 2, for August, whereas it really should have been credited to Vol. 15, No. 391, for May 31. To show the annoyance that will be caused by this mixing up and derangement, we were at first unable to find the article on Cantharidin in the original! If, therefore, the reprint must take place, let it be word for word, page for page, and date for date. It would be better that the American publishers should sell the original, as agents for the London publishers, at a fair profit, but in case that cannot be done let them issue a *fac simile*, properly dated.

Synopsis of the Course of Lectures on Materia Medica and Pharmacy delivered in the University of Pennsylvania, with five Lectures on the Modus Operandi of Medicines. By Joseph Carson, M. D. Fourth edition, revised. Philad.: Henry C. Lea. 1867, pp. 272.

This new edition of Dr. Carson's syllabus has been rendered more useful to the student by the introduction of five lectures on the operation of medicines, fully written out, so that the student may have them before him for careful study, and thus aid him in grasping this important and difficult subject.

The Physician's Visiting List for 1868. Philad.: Lindsay & Blakiston.

This annual visitor is again on our table, and reminds us to tell our medical friends that their wants have been provided for by the publishers in a new edition of this useful pocket companion.

Is it I? a book for every man; a companion to Why Not? a book for every woman. By Prof. Horatio R. Storer, M. D., of Boston, Vice-President of the American Medical Association. Boston: Lee & Shepard. 1867, pp. 154, 18mo.

The same reasons that caused the approval of "Why Not?" in our July

issue, as a testimony against abortion in all its shapes, and especially against that practised in married life, leads us to entertain a favorable opinion of the present volume, as an appeal for justice to the understandings of men, in a case where their own passions are at the bar. It is a plea for reasonable continence in married life, based on true respect for women, as the foundation of domestic happiness. Let every man read it, and ask, Is it I?

British Pharmacopœia. Published under the direction of the General Council of Medical Education and Registration of the United Kingdom, pursuant to the Medical Act of 1857-67. London.

We are indebted to Prof. Redwood for a copy of the new edition of the British Pharmacopœia, prepared by himself and Mr. Warrington, of Apothecaries' Hall, and hope to be able to notice it in a future number of this Journal.

LETTERS RECEIVED from I. L. Putegat, of Brownsville, Texas, George C. Schæffer, Washington, D. C., and W. D. Atkinson, Jr., of Boston, will receive attention.

OBITUARY.

· GUIBOURT.—Nicholas-John-Baptist Gaston Guibourt, was born in Paris in 1790, and died on the 22d of August last, in the 77th year of his age. He was educated as a Pharmacien in the Pharmacy of Boudet, where he commenced his career in 1806. He afterwards served as an interne of the Hospitals, and graduated with honor at the École de Pharmacie in 1816. He was subsequently appointed director of the magazine of the Central Pharmacy of the Hospitals of Paris. It was when in occupancy of this position, that he conceived the idea of writing his "*Histoire des Drogues Simples*," and he afterwards, in connection with M. Henry, published his "*Pharmacopée Raisonnée*, a treatise on Practical and Theoretical Pharmacy. In 1824 he became a member of the Academy of Medicine, and in 1832 was elected to succeed Pelletier in the chair of Natural History of Drugs in the Ecole de Pharmacie. In 1845 he gave up the pharmaceutical business which he had pursued for 27 years, and devoted himself to the interest of the School of Pharmacy, greatly advanced the reputation of the branch of instruction which he taught, and extended the collections of the museum, which he labelled with great care and exactness to give them authenticity. A marked trait of M. Guibourt was his earnest pursuit of the truth in science, and it was this that gave character to his works. His merit was enhanced by modesty and disinterestedness, his ambition being to pursue at his leisure the problems of science, and the

pages of the *Journal de Pharmacie* teem with the results of his labors, from 1816 to the present year.

M. Guibourt was twice an occupant of the presidential chair of the *Société de Pharmacie*, and held it at the time of his death. In 1865 he was a delegate to the first International Pharmaceutical Congress, at Brunswick, and was one of the commissioners to prepare for the Congress at Paris. In 1866 he resigned his professorship in obedience to bodily weakness, but continued his scientific labors to the last, having presided at the Society of Pharmacy two weeks prior to his decease, and he was named provisional president by the French Pharmaceutical Congress which met on the 17th of August, four days before his death. When the International Congress met on the 21st of August, some supposed M. Guibourt would be its president, but he did not appear at the first session, and on the morning of the second his decease was announced. During a short sojourn in Paris, in May last, the writer called at 6 rue Censier, and was kindly received by M. Guibourt, who at the time was engaged in his garden training vines. The impression gained at this interview was a very pleasant one, and it was with no ordinary regret that the announcement of his death was received. The funeral took place at noon on the 24th of August, proceeding to the church, and thence to the grave at the cemetery of Mont Martre. The faculties of the *Académie de Médecine* and of the *École de Pharmacie* were present in their professional garbs, and MM. Planchon, Mialhe, Baignet and Mayet delivered funeral discourses.

W. P., Jr.

FARADAY.—In our last issue the death of this great man was announced through the agency of the Atlantic Cable. The journals now afford abundant materials for a more extended notice. Faraday as a philosopher belongs to all the world; but as a man and citizen he was a true Briton in his cast of intellect and manner of life. He was too truly great to be spoiled, else the temptations of place and wealth would have ruined him by turning him aside from that high path of scientific research to which he perseveringly held.

“Michael Faraday was born in 1791, at Newington, in Surrey. His father was a blacksmith, and we deeply regret that we have no authentic record of his youth until the time he was apprenticed to a book binder. It is certain, however, that at the time of his apprenticeship he was enthusiastically fond of science, and he even made an electrical machine and other scientific apparatus. The almost incredible skill which he had with his hands (a skill which is born with a man and which in its perfection cannot be taught), induces us to believe that he could find much less difficulty than most men in acquiring the power of using the *materia technica* of chemistry and physics; and the readiness, with which Sir Humphrey Davy received him as an assistant into his laboratory is a pretty

strong evidence that at that time he knew enough of chemistry to make himself exceedingly useful, (*Chem. News*, Aug. 30). How it happened that Faraday entered Davy's service is better told in his letter to Dr. Paris, and the reply which we obtain from the "Laboratory" for Aug. 31.

To J. A. PARIS, M. D.

Royal Institution, Dec. 23, 1867.

MY DEAR SIR,—You asked me to give you an account of my first introduction to Sir Humphrey Davy, which I am very happy to do, as I think the circumstances will bear testimony to his goodness of heart.

When I was a bookseller's apprentice I was very fond of experiments and very averse to trade. It happened that a gentleman, a Member of the Royal Institution, took me to hear some of Sir H. Davy's last lectures in Albemarle Street. I took notes, and afterwards wrote them out more fairly in a quarto volume. My desire to escape from trade, which I thought vicious and selfish and to enter into the service of science, which I imagined made its pursuers amiable and liberal, induced me at last to take the bold and simple step of writing to Sir H. Davy, expressing my wishes, and a hope that if an opportunity came in the way he would forward my views. At the same time I sent the notes I had taken at his lecture.

The answer, which makes all the point of my communication, I send you in the original, requesting you to take great care of it and let me have it back, for you may imagine how much I value it.

You will observe that this took place at the end of the year 1812, and early in 1813 he requested to see me, and told me of the situation of assistant in the laboratory of the Royal Institution, then just vacant.

At the same time that he thus gratified my desires at a scientific employment, he still advised me not to give up the prospects I had before me, telling me that science was a harsh mistress, and in a pecuniary point of view but poorly rewarding those who devoted themselves to her service. He smiled at my notion of the superior moral feelings of philosophic men, and said he would leave the experience of a few years to set me right on that matter.

Finally, through his good efforts, I went to the Royal Institution early in March of 1813, as assistant in the laboratory; and in October of the same year went with him abroad as his assistant in experiments and in writing. I returned with him in April, 1813, resumed my station in the Royal Institution, and have, as you know, ever since remained there.

I am, dear sir, very truly yours,

M. FARADAY.

To M. FARADAY,—

SIR:—I am far from displeased at the proof you have given me of your confidence, and which displays great zeal, power of memory and attention. I am obliged to go out of town, and shall not be settled in town till the end of January. I will then see you at any time you wish.

It would gratify me to be of any service to you. I wish it may be in my power.

I am, sir, your obedient humble servant,

H. DAVY.

With the Royal Institution laboratory as an arena, Faraday's intellect quietly, but certainly developed in the direction he most loved, gathering force by discipline and preparing him for those great discoveries that afterwards connected his name indissolubly with chemical philosophy. He discovered Benzole, determined the composition of Naphthalin and discovered Chloride of Carbon in 1820. In 1821 he made his brilliant discovery of the power of rotation given by a current of electricity to a wire

placed around a magnetic pole, one of the greatest steps made in electrical progress. In 1821 he proved that gases and vapors were synonymous terms by condensing muriatic acid to a liquid, in 1824 he was elected to the Royal Society, in 1827 published his "Chemical Manipulation," in 1829 he was appointed lecturer on Chemistry at Woolwich, in 1833 Fullerman Prof. of Chemistry in the Royal Institution, and in 1839, 1844 and 1845, he published successively the three volumes of "Experimental researches on Electricity" that embrace his great electrical discoveries. In 1846 he received the Rumford Medal of the Royal Society for discoveries in light, and in 1847 he announced the magnetic character of oxygen and the relation of gases generally to magnetism.

Faraday's reputation won for him scientific titles from various societies too numerous to mention. Mr. Crookes, speaking of him as a lecturer, says: "His delivery was by no means rapid, and short-hand writers easily followed him. His language was well chosen, and when surrounded by his apparatus he seemed almost inspired. The most simple experiment in his hands told its tale so well, and by the manner in which it was done assumed such marvellous freshness, that we forget that we have performed it hundreds of times ourselves, and gazed upon it as eagerly as the veriest tyro in the theatre." Speaking of his enthusiasm, "it is as it were contagious, and in his case at least he always secured an attentive, nay, a wrapt audience. To see him perform an experiment was in itself a most instructive study; a failure was with him almost a thing unknown. His readiness of resource was wonderful, and if in the course of an experiment an unforeseen phase developed itself, if instructive, it was commented on."

Faraday's manners were characterized by an extreme gentleness and tenderness for the feelings of others. No one could write to him for advice or assistance without receiving it, and his advice was sure to be wise and good. He was entirely free from scientific jealousy and delighted to do justice to other discoverers. His reply when asked the secret of his success was, "the secret is comprized in three words—work, finish, publish."

In 1824 Faraday married Miss Barnard, the daughter of a silversmith of London, but like Davy, Berzelius and Wollaston, left no children to inherit his glorious name.

In 1858 the Queen of England assigned him a residence in Hampton Court, which he continued to occupy till his death, which occurred on Sunday the 25th of August, 1867. He was buried on the 30th, being first taken to the Royal Institution and then to Highgate Cemetery.

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